Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

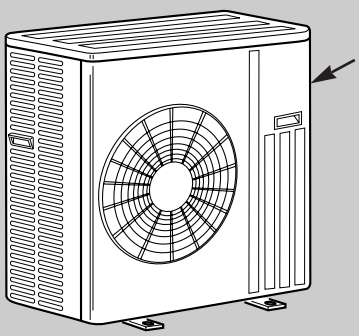
HFC utilized R410A

SERVICE MANUAL

Wireless type
Models

No. OB389

MUZ-GA50VA - E1
MUZ-GA60VA - E1
MUZ-GA71VA - E1



Indication of model name
MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

CONTENTS

NOTE:
This service manual describes technical data of the outdoor units.
•As for indoor units MSZ-GA50VA -E1, MSZ-GA60VA -E1 and MSZ-GA71VA -E1, refer to the service manual OB388.

CE

1 TECHNICAL CHANGES

MUZ-A18YV -E1 → MUZ-GA50VA -E1
MUZ-A24YV -E1 → MUZ-GA60VA -E1
MUZ-A26YV -E1 → MUZ-GA71VA -E1

1.Indication of capacity has been changed.(BTU base → kW base)
2.Outdoor electronic control P.C. board has been changed.
3.Noise filter P.C. board has been changed.
4.Length of fan motor lead wire been changed.
5.Shape of relay panel has been changed.
6.Signal of terminal block has been changed.

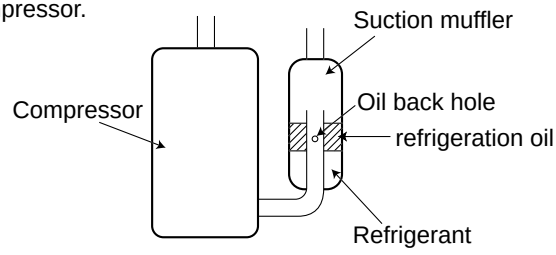
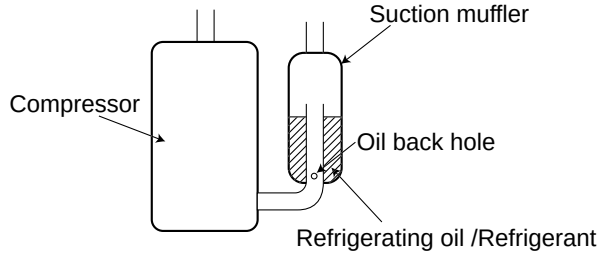
INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- This room air conditioner adopts HFC refrigerant (R410A) which never destroys the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.

① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/ materials are required. Refer to the table below.
② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

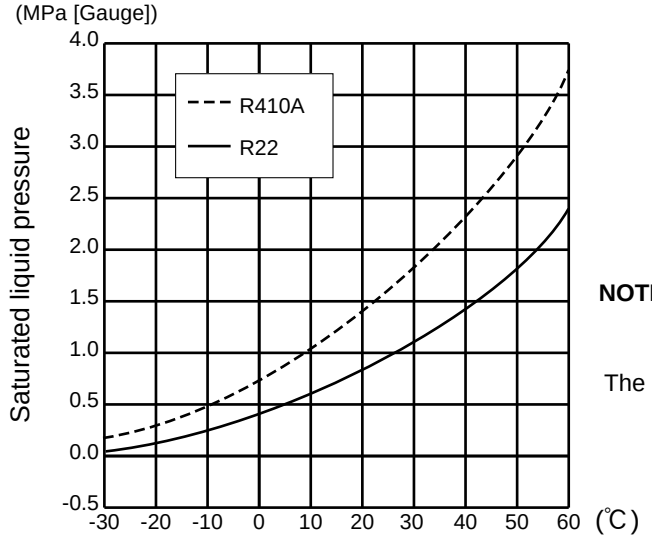
		New refrigerant	Previous refrigerant
Refrigerant	Refrigerant	R410A	R22
	Composition (Ratio)	HFC-32: HFC-125 (50%:50%)	R22 (100%)
	Refrigerant handling	Pseudo-azeotropic refrigerant	Single refrigerant
	Chlorine	Not included	Included
	Safety group (ASHRAE)	A1/A1	A1
	Molecular weight	72.6	86.5
	Boiling point (℃)	-51.4	-40.8
	Steam pressure [25℃](Mpa)	1.557	0.94
	Saturated steam density [25℃](Kg/m³)	64	44.4
	Combustibility	Non combustible	Non combustible
	ODP ※1	0	0.055
	GWP ※2	1730	1700
	Refrigerant charge method	From liquid phase in cylinder	Gas phase
	Additional charge on leakage	Possible	Possible
Refrigeration oil	Kind	Incompatible oil	Compatible oil
	Color	Non	Light yellow
	Smell	Non	Non

※1 :Ozone Destruction Parameter : based on CFC-11
※2 :Global Warmth Parameter : based on CO_2

	New Specification	Current Specification
Compressor	The incompatible refrigeration oil easily separates from refrigerant and is in the upper layer inside the suction muffler. Raising position of the oil back hole enables to back the refrigeration oil of the upper layer to flow back to the compressor. 	Since refrigerant and refrigeration oil are compatible each, refrigeration oil goes back to the compressor through the lower position oil back hole. 

NOTE : The unit of pressure has been changed to MPa on the international system of units(SI unit system).
The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/㎠ [Gauge])**

Conversion chart of refrigerant temperature and pressure



NOTE : The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/㎠ [Gauge])**

1.Tools dedicated for the air conditioner with R410A refrigerant

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.
The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	6.35 mm and 9.52 mm
	No	12.7 mm and 15.88mm
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work (to be used with R22 flare tool).
Vacuum pump adapter	New	Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization

No : Not Substitutable for R410A Yes : Substitutable for R410A

2.Refrigerant piping

① Specifications

Use the refrigerant pipes that meet the following specifications.

Pipe	Outside diameter mm	Wall thickness	Insulation material
For liquid	6.35	0.8 mm	Heat resisting foam plastic Specific gravity 0.045 Thickness 8 mm
	9.52	0.8 mm	
For gas	12.7	0.8 mm	
	15.88	1.0 mm	

• Use a copper pipe or a copper-alloy seamless pipe with a thickness of 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88). Never use any pipe with a thickness less than 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88), as the pressure resistance is insufficient.

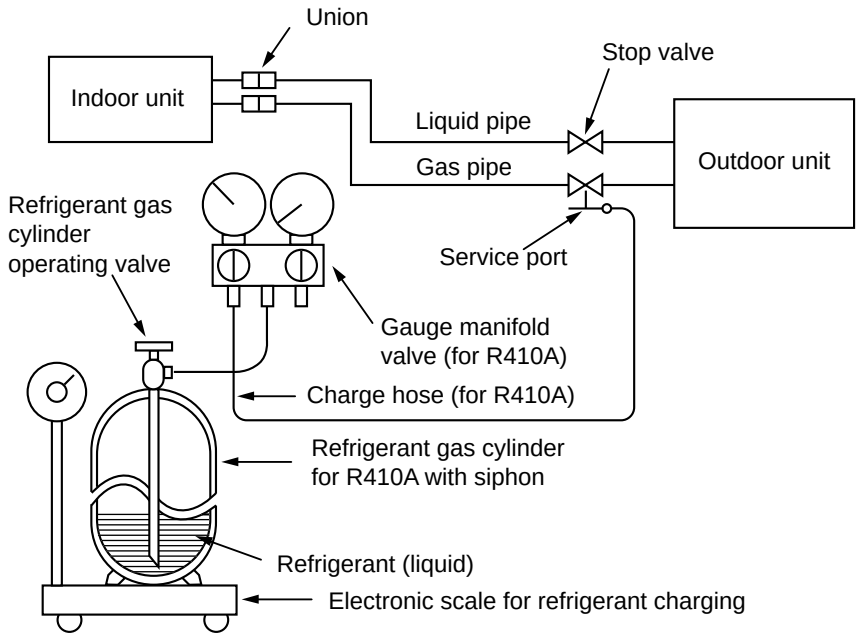
② Flaring work and flare nut
Flaring work for R410A pipe differs from that for R22 pipe.
For details of flaring work, refer to Installation manual “FLARING WORK”.

Pipe diameter	Dimension of flare nut	
mm	R410A	R22
6.35	17	17
9.52	22	22
12.7	26	24
15.88	29	27

3.Refrigerant oil
Apply the special refrigeration oil (accessories: packed with indoor unit) to the flare and the union seat surfaces.

4.Air purge
- Do not discharge the refrigerant into the atmosphere.
  Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- Use the vacuum pump for air purging for the purpose of environmental protection.

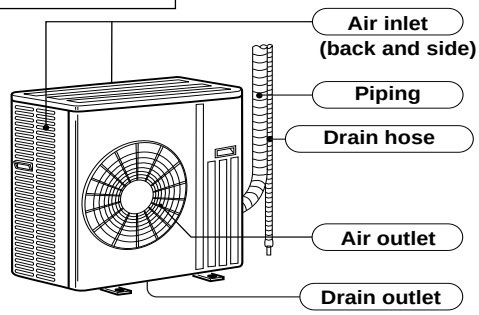
5.Additional charge
For additional charging, charge the refrigerant from liquid phase of the gas cylinder.
If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, ability of the refrigeration cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.



2 PART NAMES AND FUNCTIONS

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

OUTDOOR UNIT



ACCESSORIES

		MUZ-GA50VA -E1 MUZ-GA60VA -E1 MUZ-GA71VA -E1
①	Drain socket	1
②	Drain cap ϕ33	2

3 SPECIFICATION

Outdoor model			MUZ-GA50VA -E1		MUZ-GA60VA -E1		MUZ-GA71VA -E1	
Function			Cooling	Heating	Cooling	Heating	Cooling	Heating
Power supply			Single phase 230V,50Hz		Single phase 230V,50Hz		Single phase 230V,50Hz	
Capacity	Capacity Rated frequency(Min.-Max.)	kW	5.0(0.9-5.9)	5.9(0.9-7.8)	6.0(0.9-6.7)	6.8(0.9-8.1)	7.1(0.9-8.3)	8.1(0.9-9.6)
	Dehumidification	ℓ /h	2.5	—	3.0	—	3.8	—
	Air flow(High/Low※)	m³ /h	2,940/1,650※	2,940/2,210※	2,940/1,650※	2,940/2,210※	2,940/1,650※	2,940/2,210※
Electrical data	Power outlet	A	20		20		20	
	Running current	A	6.23	7.01	8.23	8.33	10.4	10.6
	Power input	W	1,410	1,580	1,870	1,880	2,360	2,390
	Power factor	%	98.4	98.0	98.8	98.1	98.7	98.0
	Starting current ✻1	A	7.46		8.93		11.2	
	Compressor motor current ✻1	A	5.93	6.71	7.93	8.03	10.1	10.3
	Fan motor current	A	0.30		0.30		0.30	
Coefficient of performance(C.O.P) ✻1			3.42	3.62	3.11	3.51	2.93	3.31
Compressor	Model		SNB130FLDH		SNB130FLDH		TNB220FMCH	
	Output	W	850		850		1,300	
	Winding resistance(at 20℃)	Ω	U-V 0.45 W-U 0.45 V-W 0.45		U-V 0.45 W-U 0.45 V-W 0.45		U-V 1.41 W-U 1.41 V-W 1.41	
Fan motor	Model		RC0J60-AA		RC0J60-AA		RC0J60-AA	
	Winding resistance(at 20℃)	Ω	BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2		BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2		BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2	
	Dimensions W×H×D	mm	840×850×330		840×850×330		840×850×330	
	Weight	kg	53		53		58	
Special remarks	Sound level(High/Low※)	dB	53/51※	55/53※	53/51※	55/53※	53/51※	55/53※
	Fan speed(High/Low※)	rpm	800/480※	800/620※	800/480※	800/620※	800/480※	800/620※
	Fan speed regulator		2		2		2	
	Refrigerant filling capacity(R410A)	kg	1.8		1.8		2.0	
	Refrigeration oil(Model)	cc	450 (NEO22)		450 (NEO22)		870 (NEO22)	
	Thermistor RT62(at 100℃)	kΩ	13.4		13.4		13.4	
	Thermistor RT61(at 25℃)	kΩ	10.0		10.0		10.0	
	Thermistor RT64(at 50℃)	kΩ	17.0		17.0		17.0	
	Thermistor RT65(at 25℃)	kΩ	10.0		10.0		10.0	
	Thermistor RT68(at 25℃)	kΩ	10.0		10.0		10.0	

NOTE : Test conditions are based on ISO 5151.
Cooling : Indoor DB 27℃ WB 19℃
Outdoor DB 35℃ WB (24℃)
Heating : Indoor DB 20℃ WB 15℃
Outdoor DB 7℃ WB 6℃
Refrigerant piping length (one way): 5m
✻1 Measured under rated operating frequency.
※ Reference value

Specifications and rating conditions of main electric parts

OUTDOOR UNIT

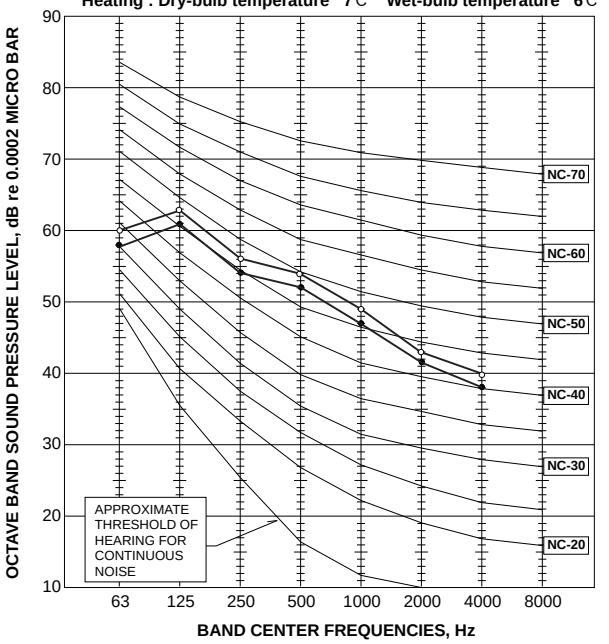
Item \ Model		MUZ-GA50VA - E1	MUZ-GA60VA - E1	MUZ-GA71VA - E1
Smoothing capacitor	(CB1,2,3)	560μF 450V		
Current transformer	(CT1,2)	ETQ19Z68AY		
Current transformer	(CT61)	ETQ19Z53AY		
Fuse	(F64)	250V 2A		
Fuse	(F801)	250V 3.15A		
Fuse	(F911)	250V 1A		
Intelligent power module	(HC930)	PS21661-RZ		
High pressure switch	(HPS)	–		ACB-DB156
Intelligent power module	(IPM)	PS21244-A		
Reactor	(L)	340μH 20A		
Expansion valve coil	(LEV)	CAM-MD12ME		
Power factor controller	(PFC)	PS51259-A		
Resistor	(R64A,B)	10Ω 10W		
Resistor	(R937A,B)	1.1Ω 2W 2%		
Resistor	(RS1~4)	0.04Ω 7W		
Solenoid coil relay	(SSR61)	TLP3506		
Terminal block	(TB1)	3P		
Terminal block	(TB2)	3P		
Relay	(X64)	G4A		
R.V. coil	(21S4)	LD30013		

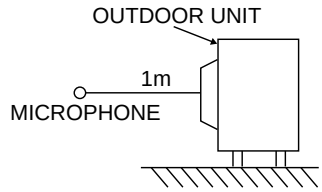
4 NOISE CRITERIA CURVES

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	53	●——●
	HEATING	55	○——○

Test conditions,
Cooling : Dry-bulb temperature 35℃ Wet-bulb temperature (24℃)
Heating : Dry-bulb temperature 7℃ Wet-bulb temperature 6℃



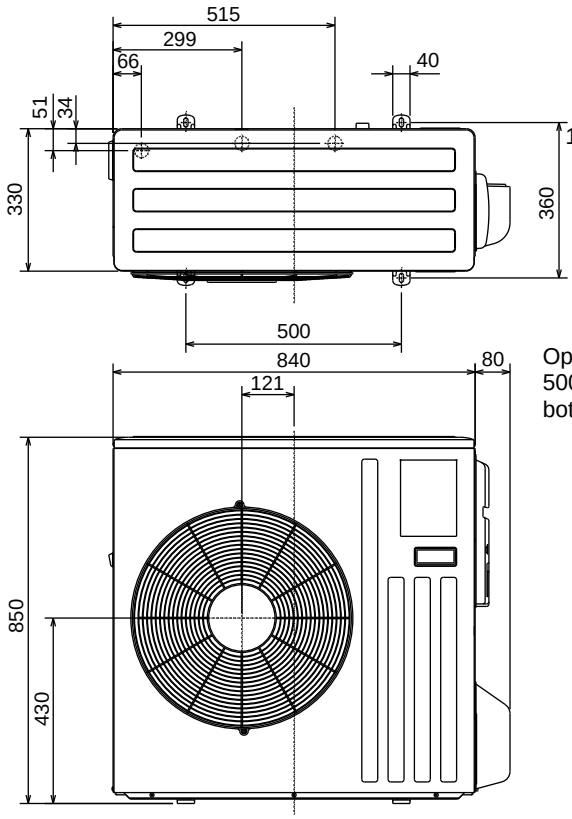


5 OUTLINES AND DIMENSIONS

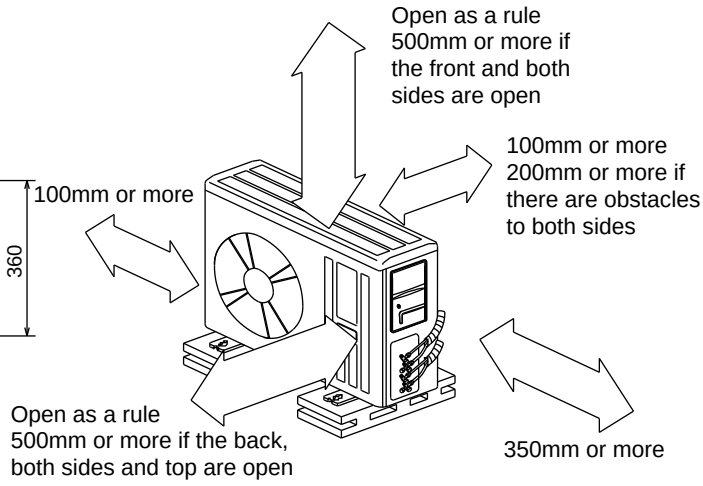
MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

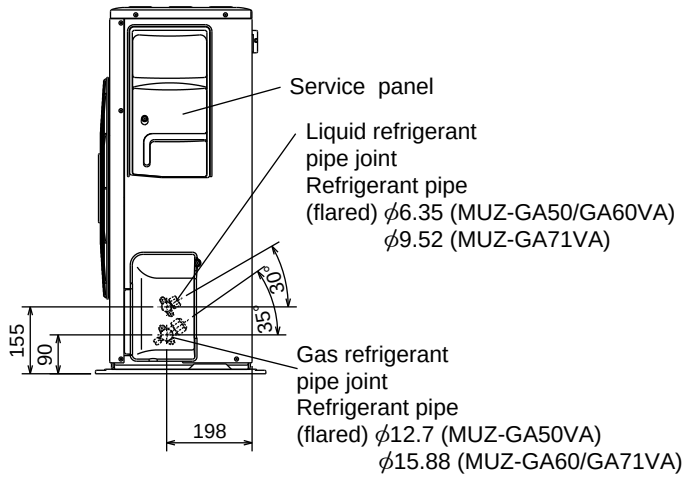
Unit: mm

OUTDOOR UNIT



REQUIRED SPACE



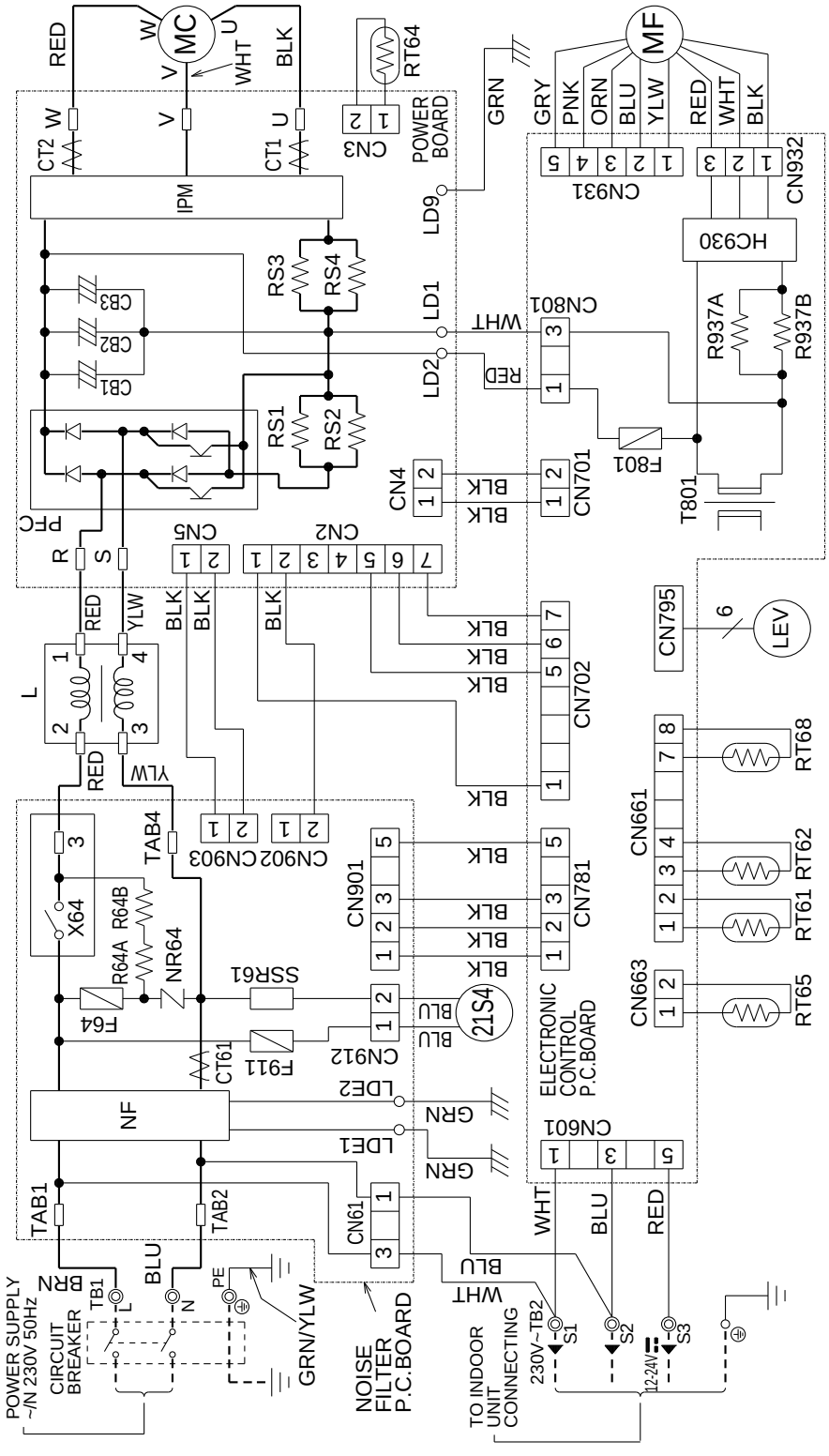


6 WIRING DIAGRAM

MUZ-GA50VA -E1
MUZ-GA60VA -E1

OUTDOOR UNIT

MODELS WIRING DIAGRAM



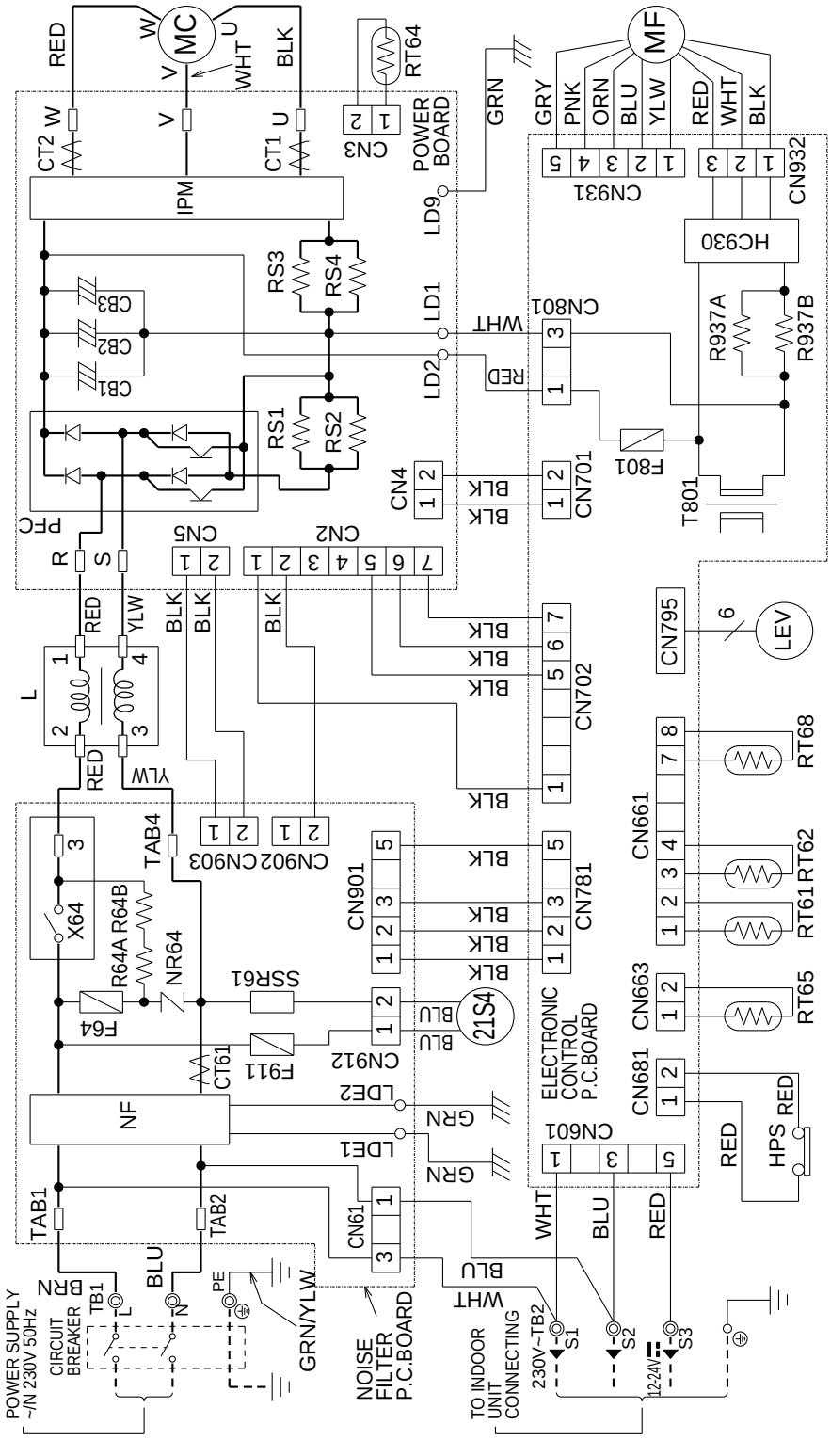
NOTES: 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only (for field wiring).
3. Symbols below indicate.
◎: Terminal block □□□: Connector

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	MC	COMPRESSOR	RT64	FIN TEMPERATURE THERMISTOR
CT1, 2	CURRENT TRANSFORMER	MF	OUTDOOR FAN MOTOR	RT65	AMBIENT TEMPERATURE THERMISTOR
CT61	CURRENT TRANSFORMER	NF	NOISE FILTER	RT68	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR
F64	FUSE (T2AL 250V)	NR64	VARISTOR		
F801	FUSE (T3.15AL 250V)	PFC	POWER FACTOR CONTROLLER	SSR61	SOLENOID COIL RELAY
F911	FUSE (T1AL 250V)	R64A,B	RESISTOR	T801	TRANSFORMER
HC930	INTELLIGENT POWER MODULE	R937A, B	RESISTOR	TB1	TERMINAL BLOCK
IPM	INTELLIGENT POWER MODULE	RS1~4	RESISTOR	TB2	TERMINAL BLOCK
L	REACTOR	RT61	DEFROST THERMISTOR	X64	RELAY
LEV	EXPANSION VALVE COIL	RT62	DISCHARGE TEMPERATURE THERMISTOR	21S4	R.V. COIL

MUZ-GA71VA -E1

OUTDOOR UNIT

MODEL WIRING DIAGRAM



SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
CT1, 2	CURRENT TRANSFORMER
CT61	CURRENT TRANSFORMER
F64	FUSE (T2AL 250V)
F801	FUSE (T3.15AL 250V)
F911	FUSE (T1AL 250V)
HC930	INTELLIGEMT POWER MODULE
HPS	HIGH PRESSURE SWITCH
IPM	INTELLIGEMT POWER MODULE
L	REACTOR
LEV	EXPANSION VALVE COIL

SYMBOL	NAME
MC	COMPRESSOR
MF	OUTDOOR FAN MOTOR
NF	NOISE FILTER
NR64	VARISTOR
PFC	POWER FACTOR CONTROLLER
R64A,B	RESISTOR
R937A, B	RESISTOR
RS1~4	RESISTOR
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMPERATURE THERMISTOR
RT64	FIN TEMPERATURE THERMISTOR

SYMBOL	NAME
RT65	AMBIENT TEMPERATURE THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR
SSR61	SOLENOID COIL RELAY
T801	TRANSFORMER
TB1	TERMINAL BLOCK
TB2	TERMINAL BLOCK
X64	RELAY
21S4	R.V. COIL

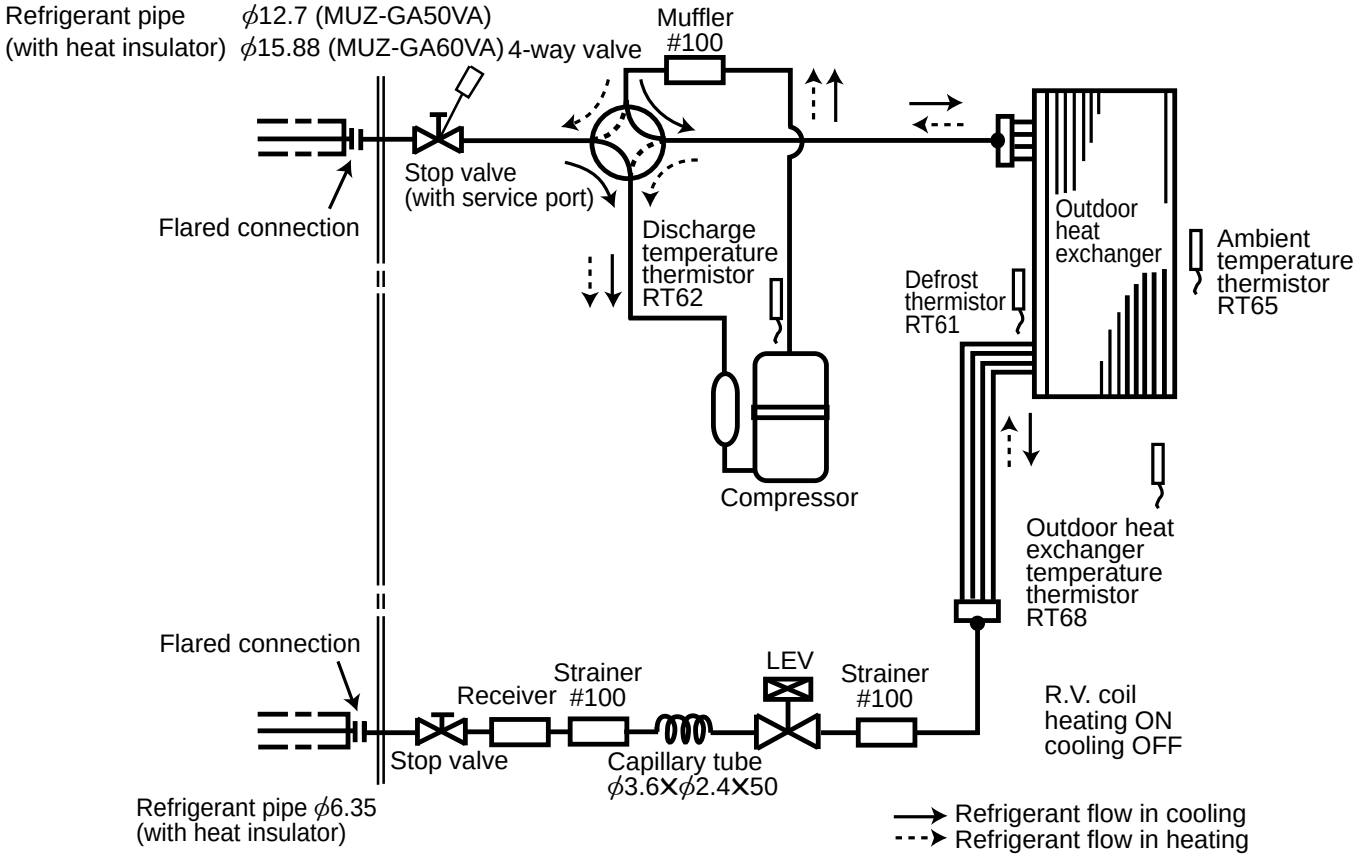
NOTES: 1.About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2.Use copper conductors only (for field wiring).
3.Symbols below indicate.
◎:Terminal block □□□:Connector

7 REFRIGERANT SYSTEM DIAGRAM

MUZ-GA50VA -E1
MUZ-GA60VA -E1

Unit:mm

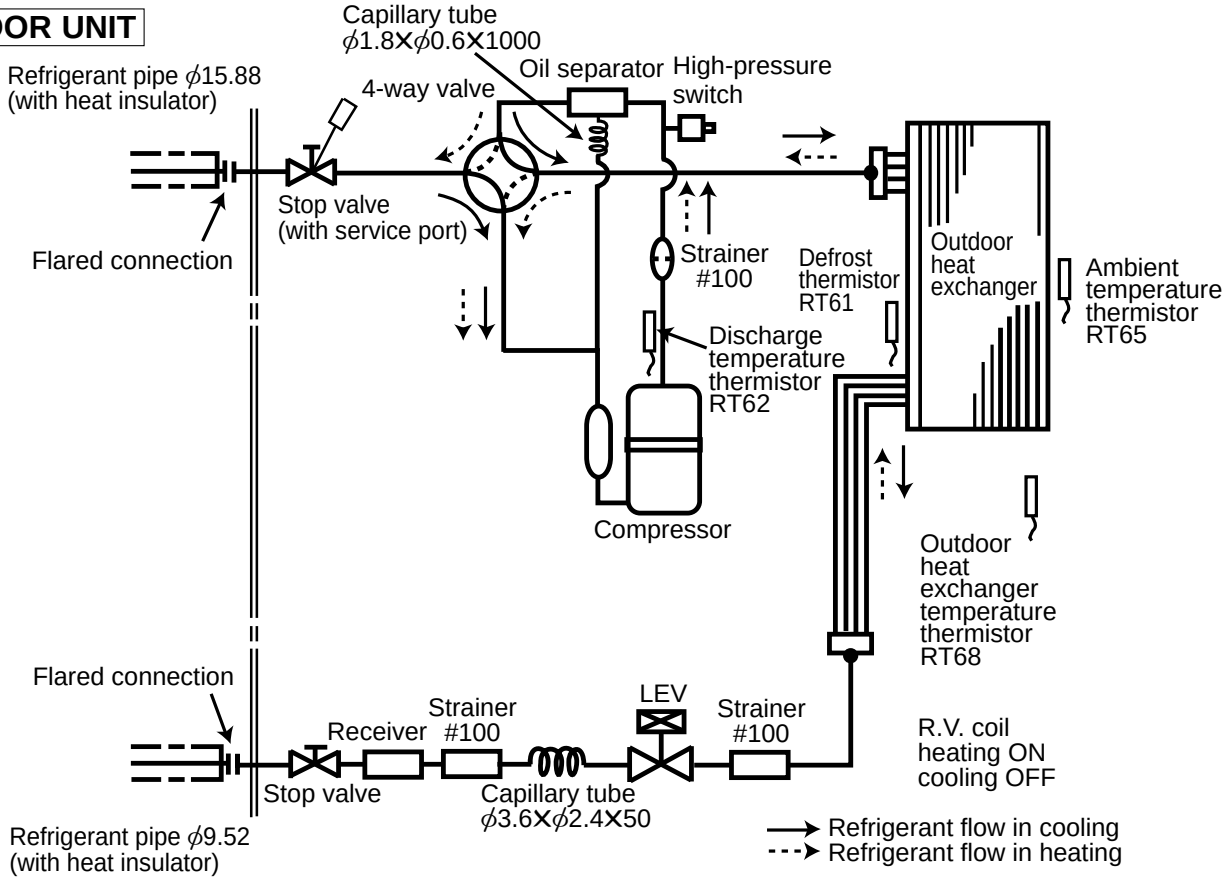
OUTDOOR UNIT



MUZ-GA71VA -E1

Unit:mm

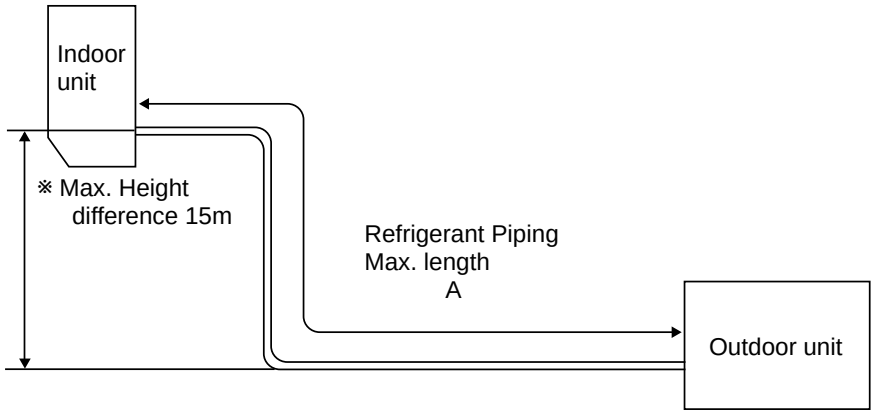
OUTDOOR UNIT



MAX. REFRIGERANT PIPING LENGTH

Model	Refrigerant piping Max. length : m A	Piping size O.D : mm		Length of connecting pipe : m	
		Gas	Liquid	Indoor unit	Outdoor unit
MUZ-GA50VA - E1	30	12.7	6.35	Gas 0.43 Liquid 0.5	Gas 0 Liquid 0
MUZ-GA60VA - E1		15.88			
MUZ-GA71VA - E1			9.52		

MAX. HEIGHT DIFFERENCE



※ Height difference should be within 15m regardless of which unit, indoor or outdoor position is high.

ADDITIONAL REFRIGERANT CHARGE(R410A : g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MUZ-GA50VA - E1	1,800	0	60	160	260	360	460

Calculation : Xg=20g/m × (Refrigerant piping length (m)–7)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MUZ-GA60VA - E1	1,800	0	60	160	260	360	460

Calculation : Xg=20g/m × (Refrigerant piping length (m)–7)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MUZ-GA71VA - E1	2,000	0	165	440	715	990	1,265

Calculation : Xg=55g/m×(Refrigerant piping length(m)-7)

8 PERFORMANCE CURVES

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

The standard data contained in these specifications apply only to the operation of the air conditioner under normal conditions. Since operating conditions vary according to the areas where these units are installed. The following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

(1) GUARANTEED VOLTAGE

207 ~ 253V, 50Hz

(2) AIR FLOW

Air flow should be set at MAX.

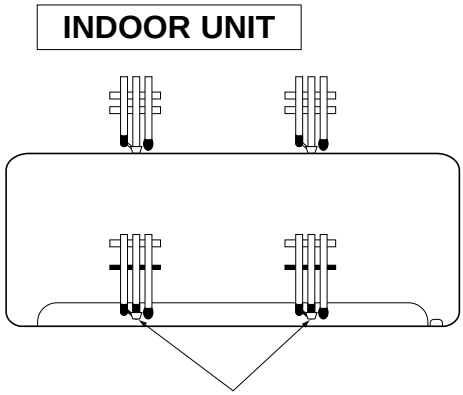
(3) MAIN READINGS

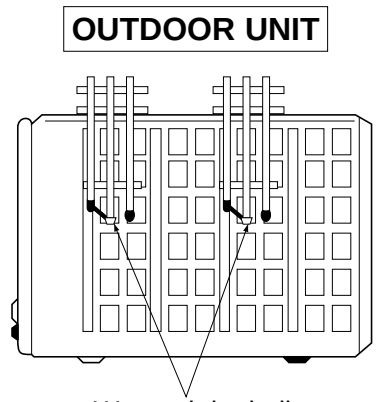
(1) Indoor intake air wet-bulb temperature :	°C WB	Cooling
(2) Indoor outlet air wet-bulb temperature :	°C WB	
(3) Outdoor intake air dry-bulb temperature :	°C DB	
(4) Total input :	W	
(5) Indoor intake air dry-bulb temperature :	°C DB	Heating
(6) Outdoor intake air wet-bulb temperature :	°C WB	
(7) Total input :	W	

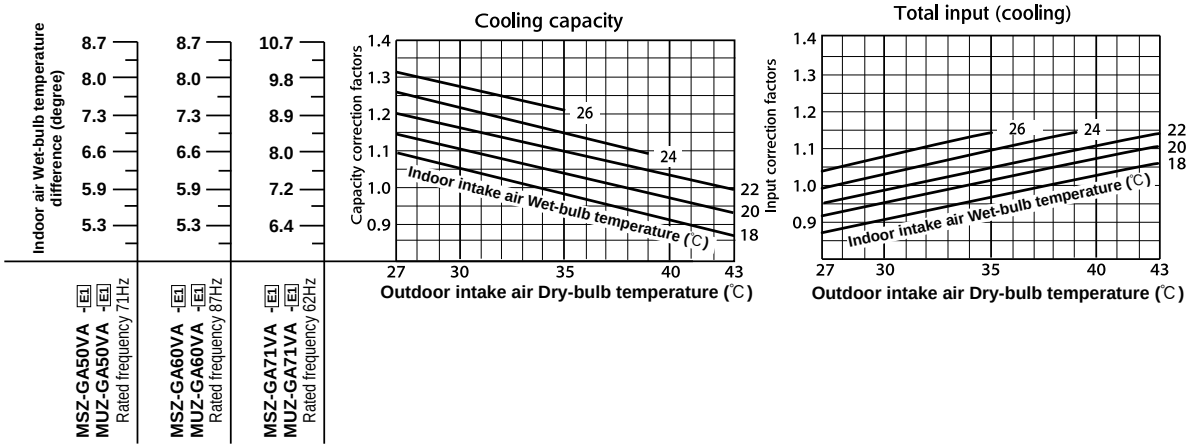
Indoor air wet/dry-bulb temperature difference on the left side of the chart on this page and next page shows the difference between the indoor intake air wet/dry-bulb temperature and the indoor outlet air wet/dry-bulb temperature for your reference at service.

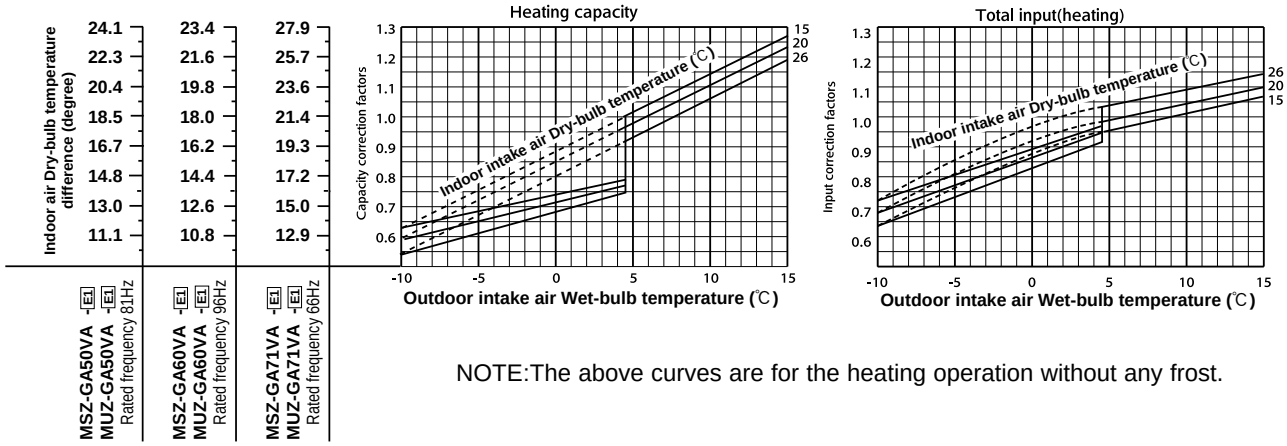
How to measure the indoor air wet-bulb / dry-bulb temperature difference

1. Attach at least 2 sets of wet and dry-bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet and dry-bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet and dry-bulb thermometers to the outdoor air intake.
   Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY OPERATION switch once (twice) to start the EMERGENCY COOL (HEAT) MODE.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. 10 minutes later, measure temperature again and check that the temperature does not change.



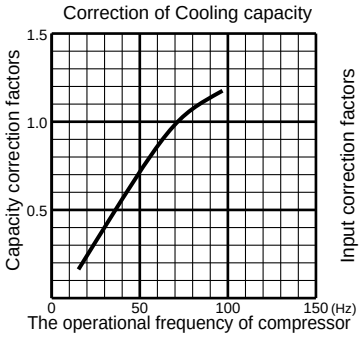




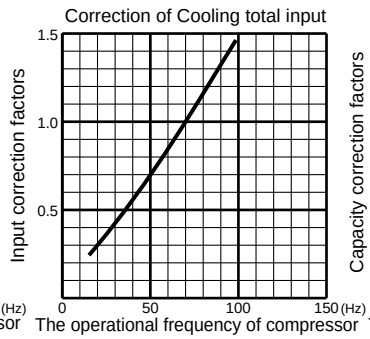


NOTE:The above curves are for the heating operation without any frost.

MUZ-GA50VA -E1



MUZ-GA50VA -E1



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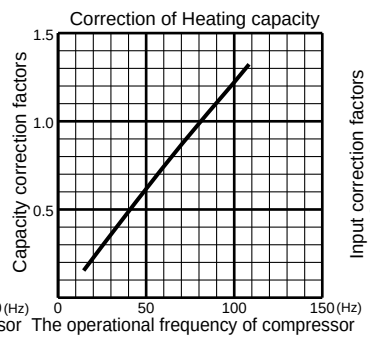
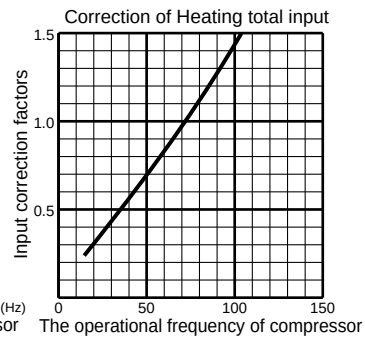
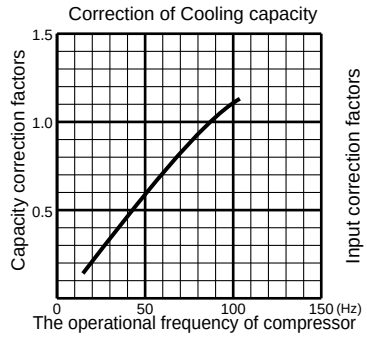


MUZ-GA50VA -E1



MUZ-GA60VA -E1



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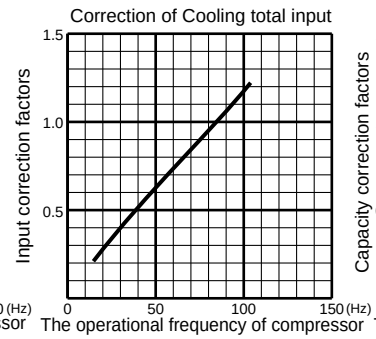

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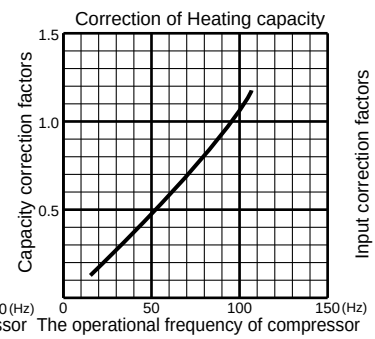

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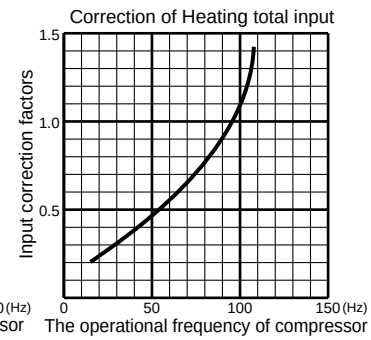

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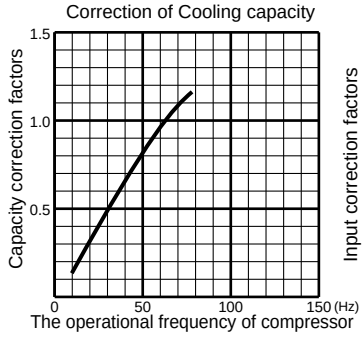

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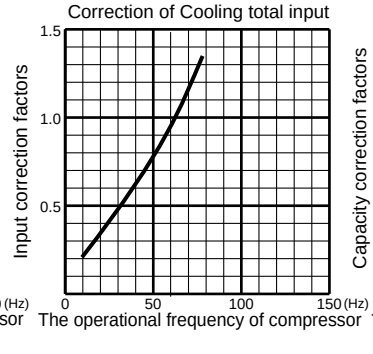

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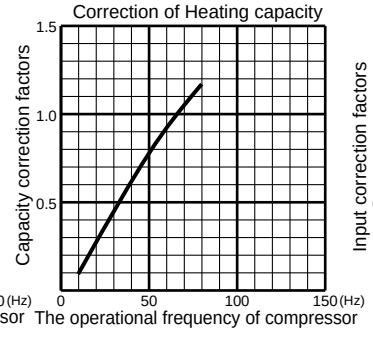

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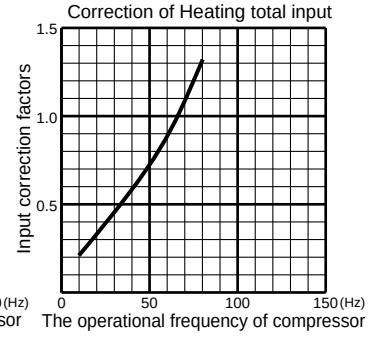


OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT

<How to operate fixed-frequency operation (Test run operation)>
1. Press EMERGENCY OPERATION switch to COOL or HEAT mode (COOL : Press once, HEAT : Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor starts at fixed-frequency.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts.
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

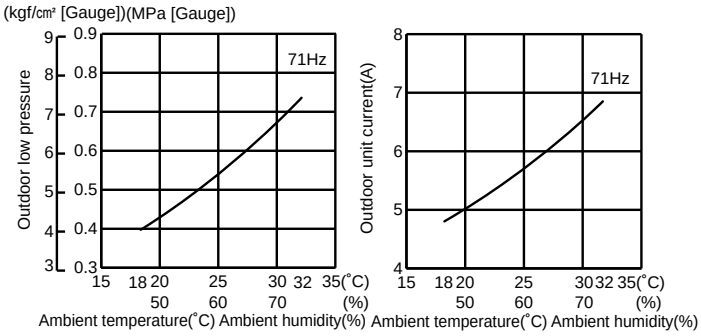
NOTE : The unit of pressure has been changed to MPa on the international system of units (SI unit system).
The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/㎠ [Gauge])**

OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT
COOL operation

① Both indoor and outdoor unit are under the same temperature/humidity condition.
② Air flow : High speed
③ Operational frequency : 71Hz(MUZ-GA50VA)
87Hz(MUZ-GA60VA)
62Hz(MUZ-GA71VA)

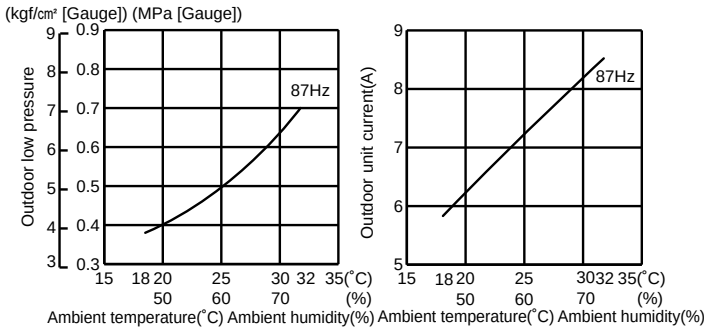
Dry-bulb temperature	Relative humidity(%)
20	50
25	60
30	70

MUZ-GA50VA - E1



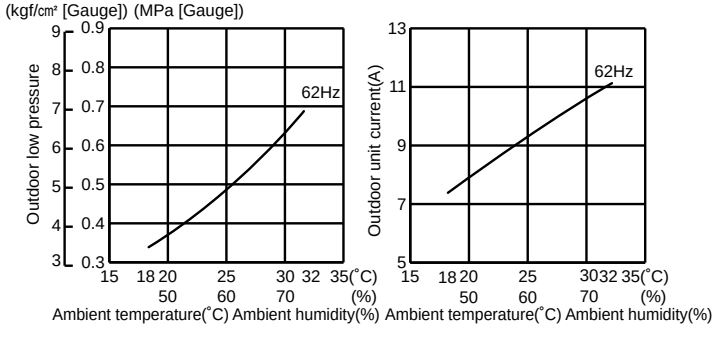
MUZ-GA50VA - E1

MUZ-GA60VA - E1



MUZ-GA60VA - E1

MUZ-GA71VA - E1



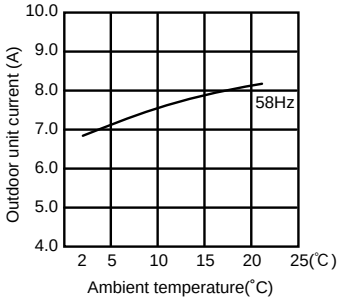
MUZ-GA71VA - E1

HEAT operation

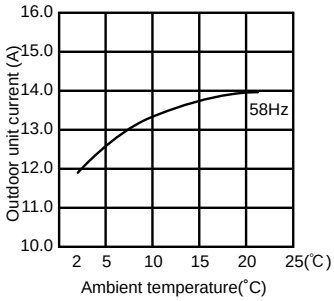
Condition indoor: Dry bulb temperature 20.0°C
Wet bulb temperature 14.5°C
Condition outdoor: Dry bulb temperature 2,7,15,20.0°C
Wet bulb temperature 1,6,12,14.5°C

Operational frequency : 58Hz

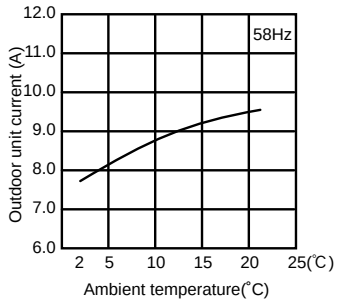
MUZ-GA50VA - E1



MUZ-GA60VA - E1



MUZ-GA71VA - E1



PERFORMANCE DATA COOL operation Rated frequency 71Hz

MSZ-GA50VA -E1 : MUZ-GA50VA -E1

CAPACITY:5.0(kW) SHF:0.73 INPUT:1460(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	3.23	0.55	1168	5.63	3.09	0.55	1226	5.40	2.97	0.55	1285	5.20	2.86	0.55	1343
21	20	6.13	2.63	0.43	1226	5.88	2.53	0.43	1299	5.70	2.45	0.43	1329	5.50	2.37	0.43	1387
22	18	5.88	3.47	0.59	1168	5.63	3.32	0.59	1226	5.40	3.19	0.59	1285	5.20	3.07	0.59	1343
22	20	6.13	2.88	0.47	1226	5.88	2.76	0.47	1299	5.70	2.68	0.47	1329	5.50	2.59	0.47	1387
22	22	6.38	2.23	0.35	1270	6.15	2.15	0.35	1351	6.00	2.10	0.35	1387	5.75	2.01	0.35	1445
23	18	5.88	3.70	0.63	1168	5.63	3.54	0.63	1226	5.40	3.40	0.63	1285	5.20	3.28	0.63	1343
23	20	6.13	3.12	0.51	1226	5.88	3.00	0.51	1299	5.70	2.91	0.51	1329	5.50	2.81	0.51	1387
23	22	6.38	2.49	0.39	1270	6.15	2.40	0.39	1351	6.00	2.34	0.39	1387	5.75	2.24	0.39	1445
24	18	5.88	3.94	0.67	1168	5.63	3.77	0.67	1226	5.40	3.62	0.67	1285	5.20	3.48	0.67	1343
24	20	6.13	3.37	0.55	1226	5.88	3.23	0.55	1299	5.70	3.14	0.55	1329	5.50	3.03	0.55	1387
24	22	6.38	2.74	0.43	1270	6.15	2.64	0.43	1351	6.00	2.58	0.43	1387	5.75	2.47	0.43	1445
24	24	6.70	2.08	0.31	1329	6.45	2.00	0.31	1402	6.30	1.95	0.31	1445	6.10	1.89	0.31	1518
25	18	5.88	4.17	0.71	1168	5.63	3.99	0.71	1226	5.40	3.83	0.71	1285	5.20	3.69	0.71	1343
25	20	6.13	3.61	0.59	1226	5.88	3.47	0.59	1299	5.70	3.36	0.59	1329	5.50	3.25	0.59	1387
25	22	6.38	3.00	0.47	1270	6.15	2.89	0.47	1351	6.00	2.82	0.47	1387	5.75	2.70	0.47	1445
25	24	6.70	2.35	0.35	1329	6.45	2.26	0.35	1402	6.30	2.21	0.35	1445	6.10	2.14	0.35	1518
26	18	5.88	4.41	0.75	1168	5.63	4.22	0.75	1226	5.40	4.05	0.75	1285	5.20	3.90	0.75	1343
26	20	6.13	3.86	0.63	1226	5.88	3.70	0.63	1299	5.70	3.59	0.63	1329	5.50	3.47	0.63	1387
26	22	6.38	3.25	0.51	1270	6.15	3.14	0.51	1351	6.00	3.06	0.51	1387	5.75	2.93	0.51	1445
26	24	6.70	2.61	0.39	1329	6.45	2.52	0.39	1402	6.30	2.46	0.39	1445	6.10	2.38	0.39	1518
26	26	6.90	1.86	0.27	1402	6.70	1.81	0.27	1475	6.60	1.78	0.27	1518	6.40	1.73	0.27	1562
27	18	5.88	4.64	0.79	1168	5.63	4.44	0.79	1226	5.40	4.27	0.79	1285	5.20	4.11	0.79	1343
27	20	6.13	4.10	0.67	1226	5.88	3.94	0.67	1299	5.70	3.82	0.67	1329	5.50	3.69	0.67	1387
27	22	6.38	3.51	0.55	1270	6.15	3.38	0.55	1351	6.00	3.30	0.55	1387	5.75	3.16	0.55	1445
27	24	6.70	2.88	0.43	1329	6.45	2.77	0.43	1402	6.30	2.71	0.43	1445	6.10	2.62	0.43	1518
27	26	6.90	2.14	0.31	1402	6.70	2.08	0.31	1475	6.60	2.05	0.31	1518	6.40	1.98	0.31	1562
28	18	5.88	4.88	0.83	1168	5.63	4.67	0.83	1226	5.40	4.48	0.83	1285	5.20	4.32	0.83	1343
28	20	6.13	4.35	0.71	1226	5.88	4.17	0.71	1299	5.70	4.05	0.71	1329	5.50	3.91	0.71	1387
28	22	6.38	3.76	0.59	1270	6.15	3.63	0.59	1351	6.00	3.54	0.59	1387	5.75	3.39	0.59	1445
28	24	6.70	3.15	0.47	1329	6.45	3.03	0.47	1402	6.30	2.96	0.47	1445	6.10	2.87	0.47	1518
28	26	6.90	2.42	0.35	1402	6.70	2.35	0.35	1475	6.60	2.31	0.35	1518	6.40	2.24	0.35	1562
29	18	5.88	5.11	0.87	1168	5.63	4.89	0.87	1226	5.40	4.70	0.87	1285	5.20	4.52	0.87	1343
29	20	6.13	4.59	0.75	1226	5.88	4.41	0.75	1299	5.70	4.28	0.75	1329	5.50	4.13	0.75	1387
29	22	6.38	4.02	0.63	1270	6.15	3.87	0.63	1351	6.00	3.78	0.63	1387	5.75	3.62	0.63	1445
29	24	6.70	3.42	0.51	1329	6.45	3.29	0.51	1402	6.30	3.21	0.51	1445	6.10	3.11	0.51	1518
29	26	6.90	2.69	0.39	1402	6.70	2.61	0.39	1475	6.60	2.57	0.39	1518	6.40	2.50	0.39	1562
30	18	5.88	5.35	0.91	1168	5.63	5.12	0.91	1226	5.40	4.91	0.91	1285	5.20	4.73	0.91	1343
30	20	6.13	4.84	0.79	1226	5.88	4.64	0.79	1299	5.70	4.50	0.79	1329	5.50	4.35	0.79	1387
30	22	6.38	4.27	0.67	1270	6.15	4.12	0.67	1351	6.00	4.02	0.67	1387	5.75	3.85	0.67	1445
30	24	6.70	3.69	0.55	1329	6.45	3.55	0.55	1402	6.30	3.47	0.55	1445	6.10	3.36	0.55	1518
30	26	6.90	2.97	0.43	1402	6.70	2.88	0.43	1475	6.60	2.84	0.43	1518	6.40	2.75	0.43	1562
31	18	5.88	5.58	0.95	1168	5.63	5.34	0.95	1226	5.40	5.13	0.95	1285	5.20	4.94	0.95	1343
31	20	6.13	5.08	0.83	1226	5.88	4.88	0.83	1299	5.70	4.73	0.83	1329	5.50	4.57	0.83	1387
31	22	6.38	4.53	0.71	1270	6.15	4.37	0.71	1351	6.00	4.26	0.71	1387	5.75	4.08	0.71	1445
31	24	6.70	3.95	0.59	1329	6.45	3.81	0.59	1402	6.30	3.72	0.59	1445	6.10	3.60	0.59	1518
31	26	6.90	3.24	0.47	1402	6.70	3.15	0.47	1475	6.60	3.10	0.47	1518	6.40	3.01	0.47	1562
32	18	5.88	5.82	0.99	1168	5.63	5.57	0.99	1226	5.40	5.35	0.99	1285	5.20	5.15	0.99	1343
32	20	6.13	5.33	0.87	1226	5.88	5.11	0.87	1299	5.70	4.96	0.87	1329	5.50	4.79	0.87	1387
32	22	6.38	4.78	0.75	1270	6.15	4.61	0.75	1351	6.00	4.50	0.75	1387	5.75	4.31	0.75	1445
32	24	6.70	4.22	0.63	1329	6.45	4.06	0.63	1402	6.30	3.97	0.63	1445	6.10	3.84	0.63	1518
32	26	6.90	3.52	0.51	1402	6.70	3.42	0.51	1475	6.60	3.37	0.51	1518	6.40	3.26	0.51	1562

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation **Rated frequency 71Hz**

MSZ-GA50VA -E1 : MUZ-GA50VA -E1

CAPACITY:5.0(kW) SHF:0.73 INPUT:1460(W)

		OUTDOOR DB(℃)											
INDOOR DB (℃)	INDOOR WB (℃)	35				40				43			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.90	2.70	0.55	1431	4.50	2.48	0.55	1518	4.33	2.38	0.55	1548
21	20	5.15	2.21	0.43	1489	4.80	2.06	0.43	1562	4.63	1.99	0.43	1606
22	18	4.90	2.89	0.59	1431	4.50	2.66	0.59	1518	4.33	2.55	0.59	1548
22	20	5.15	2.42	0.47	1489	4.80	2.26	0.47	1562	4.63	2.17	0.47	1606
22	22	5.45	1.91	0.35	1548	5.10	1.79	0.35	1635	4.93	1.72	0.35	1664
23	18	4.90	3.09	0.63	1431	4.50	2.84	0.63	1518	4.33	2.72	0.63	1548
23	20	5.15	2.63	0.51	1489	4.80	2.45	0.51	1562	4.63	2.36	0.51	1606
23	22	5.45	2.13	0.39	1548	5.10	1.99	0.39	1635	4.93	1.92	0.39	1664
24	18	4.90	3.28	0.67	1431	4.50	3.02	0.67	1518	4.33	2.90	0.67	1548
24	20	5.15	2.83	0.55	1489	4.80	2.64	0.55	1562	4.63	2.54	0.55	1606
24	22	5.45	2.34	0.43	1548	5.10	2.19	0.43	1635	4.93	2.12	0.43	1664
24	24	5.75	1.78	0.31	1606	5.40	1.67	0.31	1679	5.25	1.63	0.31	1716
25	18	4.90	3.48	0.71	1431	4.50	3.20	0.71	1518	4.33	3.07	0.71	1548
25	20	5.15	3.04	0.59	1489	4.80	2.83	0.59	1562	4.63	2.73	0.59	1606
25	22	5.45	2.56	0.47	1548	5.10	2.40	0.47	1635	4.93	2.31	0.47	1664
25	24	5.75	2.01	0.35	1606	5.40	1.89	0.35	1679	5.25	1.84	0.35	1716
26	18	4.90	3.68	0.75	1431	4.50	3.38	0.75	1518	4.33	3.24	0.75	1548
26	20	5.15	3.24	0.63	1489	4.80	3.02	0.63	1562	4.63	2.91	0.63	1606
26	22	5.45	2.78	0.51	1548	5.10	2.60	0.51	1635	4.93	2.51	0.51	1664
26	24	5.75	2.24	0.39	1606	5.40	2.11	0.39	1679	5.25	2.05	0.39	1716
26	26	6.05	1.63	0.27	1664	5.70	1.54	0.27	1737	5.53	1.49	0.27	1774
27	18	4.90	3.87	0.79	1431	4.50	3.56	0.79	1518	4.33	3.42	0.79	1548
27	20	5.15	3.45	0.67	1489	4.80	3.22	0.67	1562	4.63	3.10	0.67	1606
27	22	5.45	3.00	0.55	1548	5.10	2.81	0.55	1635	4.93	2.71	0.55	1664
27	24	5.75	2.47	0.43	1606	5.40	2.32	0.43	1679	5.25	2.26	0.43	1716
27	26	6.05	1.88	0.31	1664	5.70	1.77	0.31	1737	5.53	1.71	0.31	1774
28	18	4.90	4.07	0.83	1431	4.50	3.74	0.83	1518	4.33	3.59	0.83	1548
28	20	5.15	3.66	0.71	1489	4.80	3.41	0.71	1562	4.63	3.28	0.71	1606
28	22	5.45	3.22	0.59	1548	5.10	3.01	0.59	1635	4.93	2.91	0.59	1664
28	24	5.75	2.70	0.47	1606	5.40	2.54	0.47	1679	5.25	2.47	0.47	1716
28	26	6.05	2.12	0.35	1664	5.70	2.00	0.35	1737	5.53	1.93	0.35	1774
29	18	4.90	4.26	0.87	1431	4.50	3.92	0.87	1518	4.33	3.76	0.87	1548
29	20	5.15	3.86	0.75	1489	4.80	3.60	0.75	1562	4.63	3.47	0.75	1606
29	22	5.45	3.43	0.63	1548	5.10	3.21	0.63	1635	4.93	3.10	0.63	1664
29	24	5.75	2.93	0.51	1606	5.40	2.75	0.51	1679	5.25	2.68	0.51	1716
29	26	6.05	2.36	0.39	1664	5.70	2.22	0.39	1737	5.53	2.15	0.39	1774
30	18	4.90	4.46	0.91	1431	4.50	4.10	0.91	1518	4.33	3.94	0.91	1548
30	20	5.15	4.07	0.79	1489	4.80	3.79	0.79	1562	4.63	3.65	0.79	1606
30	22	5.45	3.65	0.67	1548	5.10	3.42	0.67	1635	4.93	3.30	0.67	1664
30	24	5.75	3.16	0.55	1606	5.40	2.97	0.55	1679	5.25	2.89	0.55	1716
30	26	6.05	2.60	0.43	1664	5.70	2.45	0.43	1737	5.53	2.38	0.43	1774
31	18	4.90	4.66	0.95	1431	4.50	4.28	0.95	1518	4.33	4.11	0.95	1548
31	20	5.15	4.27	0.83	1489	4.80	3.98	0.83	1562	4.63	3.84	0.83	1606
31	22	5.45	3.87	0.71	1548	5.10	3.62	0.71	1635	4.93	3.50	0.71	1664
31	24	5.75	3.39	0.59	1606	5.40	3.19	0.59	1679	5.25	3.10	0.59	1716
31	26	6.05	2.84	0.47	1664	5.70	2.68	0.47	1737	5.53	2.60	0.47	1774
32	18	4.90	4.85	0.99	1431	4.50	4.46	0.99	1518	4.33	4.28	0.99	1548
32	20	5.15	4.48	0.87	1489	4.80	4.18	0.87	1562	4.63	4.02	0.87	1606
32	22	5.45	4.09	0.75	1548	5.10	3.83	0.75	1635	4.93	3.69	0.75	1664
32	24	5.75	3.62	0.63	1606	5.40	3.40	0.63	1679	5.25	3.31	0.63	1716
32	26	6.05	3.09	0.51	1664	5.70	2.91	0.51	1737	5.53	2.82	0.51	1774

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation Rated frequency 87Hz

MSZ-GA60VA -E1 : MUZ-GA60VA -E1

CAPACITY:6.0(kW) SHF:0.79 INPUT:1930(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	7.05	4.30	0.61	1544	6.75	4.12	0.61	1621	6.48	3.95	0.61	1698	6.24	3.81	0.61	1776
21	20	7.35	3.60	0.49	1621	7.05	3.45	0.49	1718	6.84	3.35	0.49	1756	6.60	3.23	0.49	1834
22	18	7.05	4.58	0.65	1544	6.75	4.39	0.65	1621	6.48	4.21	0.65	1698	6.24	4.06	0.65	1776
22	20	7.35	3.90	0.53	1621	7.05	3.74	0.53	1718	6.84	3.63	0.53	1756	6.60	3.50	0.53	1834
22	22	7.65	3.14	0.41	1679	7.38	3.03	0.41	1785	7.20	2.95	0.41	1834	6.90	2.83	0.41	1911
23	18	7.05	4.86	0.69	1544	6.75	4.66	0.69	1621	6.48	4.47	0.69	1698	6.24	4.31	0.69	1776
23	20	7.35	4.19	0.57	1621	7.05	4.02	0.57	1718	6.84	3.90	0.57	1756	6.60	3.76	0.57	1834
23	22	7.65	3.44	0.45	1679	7.38	3.32	0.45	1785	7.20	3.24	0.45	1834	6.90	3.11	0.45	1911
24	18	7.05	5.15	0.73	1544	6.75	4.93	0.73	1621	6.48	4.73	0.73	1698	6.24	4.56	0.73	1776
24	20	7.35	4.48	0.61	1621	7.05	4.30	0.61	1718	6.84	4.17	0.61	1756	6.60	4.03	0.61	1834
24	22	7.65	3.75	0.49	1679	7.38	3.62	0.49	1785	7.20	3.53	0.49	1834	6.90	3.38	0.49	1911
24	24	8.04	2.97	0.37	1756	7.74	2.86	0.37	1853	7.56	2.80	0.37	1911	7.32	2.71	0.37	2007
25	18	7.05	5.43	0.77	1544	6.75	5.20	0.77	1621	6.48	4.99	0.77	1698	6.24	4.80	0.77	1776
25	20	7.35	4.78	0.65	1621	7.05	4.58	0.65	1718	6.84	4.45	0.65	1756	6.60	4.29	0.65	1834
25	22	7.65	4.05	0.53	1679	7.38	3.91	0.53	1785	7.20	3.82	0.53	1834	6.90	3.66	0.53	1911
25	24	8.04	3.30	0.41	1756	7.74	3.17	0.41	1853	7.56	3.10	0.41	1911	7.32	3.00	0.41	2007
26	18	7.05	5.71	0.81	1544	6.75	5.47	0.81	1621	6.48	5.25	0.81	1698	6.24	5.05	0.81	1776
26	20	7.35	5.07	0.69	1621	7.05	4.86	0.69	1718	6.84	4.72	0.69	1756	6.60	4.55	0.69	1834
26	22	7.65	4.36	0.57	1679	7.38	4.21	0.57	1785	7.20	4.10	0.57	1834	6.90	3.93	0.57	1911
26	24	8.04	3.62	0.45	1756	7.74	3.48	0.45	1853	7.56	3.40	0.45	1911	7.32	3.29	0.45	2007
26	26	8.28	2.73	0.33	1853	8.04	2.65	0.33	1949	7.92	2.61	0.33	2007	7.68	2.53	0.33	2065
27	18	7.05	5.99	0.85	1544	6.75	5.74	0.85	1621	6.48	5.51	0.85	1698	6.24	5.30	0.85	1776
27	20	7.35	5.37	0.73	1621	7.05	5.15	0.73	1718	6.84	4.99	0.73	1756	6.60	4.82	0.73	1834
27	22	7.65	4.67	0.61	1679	7.38	4.50	0.61	1785	7.20	4.39	0.61	1834	6.90	4.21	0.61	1911
27	24	8.04	3.94	0.49	1756	7.74	3.79	0.49	1853	7.56	3.70	0.49	1911	7.32	3.59	0.49	2007
27	26	8.28	3.06	0.37	1853	8.04	2.97	0.37	1949	7.92	2.93	0.37	2007	7.68	2.84	0.37	2065
28	18	7.05	6.27	0.89	1544	6.75	6.01	0.89	1621	6.48	5.77	0.89	1698	6.24	5.55	0.89	1776
28	20	7.35	5.66	0.77	1621	7.05	5.43	0.77	1718	6.84	5.27	0.77	1756	6.60	5.08	0.77	1834
28	22	7.65	4.97	0.65	1679	7.38	4.80	0.65	1785	7.20	4.68	0.65	1834	6.90	4.49	0.65	1911
28	24	8.04	4.26	0.53	1756	7.74	4.10	0.53	1853	7.56	4.01	0.53	1911	7.32	3.88	0.53	2007
28	26	8.28	3.39	0.41	1853	8.04	3.30	0.41	1949	7.92	3.25	0.41	2007	7.68	3.15	0.41	2065
29	18	7.05	6.56	0.93	1544	6.75	6.28	0.93	1621	6.48	6.03	0.93	1698	6.24	5.80	0.93	1776
29	20	7.35	5.95	0.81	1621	7.05	5.71	0.81	1718	6.84	5.54	0.81	1756	6.60	5.35	0.81	1834
29	22	7.65	5.28	0.69	1679	7.38	5.09	0.69	1785	7.20	4.97	0.69	1834	6.90	4.76	0.69	1911
29	24	8.04	4.58	0.57	1756	7.74	4.41	0.57	1853	7.56	4.31	0.57	1911	7.32	4.17	0.57	2007
29	26	8.28	3.73	0.45	1853	8.04	3.62	0.45	1949	7.92	3.56	0.45	2007	7.68	3.46	0.45	2065
30	18	7.05	6.84	0.97	1544	6.75	6.55	0.97	1621	6.48	6.29	0.97	1698	6.24	6.05	0.97	1776
30	20	7.35	6.25	0.85	1621	7.05	5.99	0.85	1718	6.84	5.81	0.85	1756	6.60	5.61	0.85	1834
30	22	7.65	5.58	0.73	1679	7.38	5.39	0.73	1785	7.20	5.26	0.73	1834	6.90	5.04	0.73	1911
30	24	8.04	4.90	0.61	1756	7.74	4.72	0.61	1853	7.56	4.61	0.61	1911	7.32	4.47	0.61	2007
30	26	8.28	4.06	0.49	1853	8.04	3.94	0.49	1949	7.92	3.88	0.49	2007	7.68	3.76	0.49	2065
31	18	7.05	7.12	1.01	1544	6.75	6.82	1.01	1621	6.48	6.54	1.01	1698	6.24	6.30	1.01	1776
31	20	7.35	6.54	0.89	1621	7.05	6.27	0.89	1718	6.84	6.09	0.89	1756	6.60	5.87	0.89	1834
31	22	7.65	5.89	0.77	1679	7.38	5.68	0.77	1785	7.20	5.54	0.77	1834	6.90	5.31	0.77	1911
31	24	8.04	5.23	0.65	1756	7.74	5.03	0.65	1853	7.56	4.91	0.65	1911	7.32	4.76	0.65	2007
31	26	8.28	4.39	0.53	1853	8.04	4.26	0.53	1949	7.92	4.20	0.53	2007	7.68	4.07	0.53	2065
32	18	7.05	7.40	1.05	1544	6.75	7.09	1.05	1621	6.48	6.80	1.05	1698	6.24	6.55	1.05	1776
32	20	7.35	6.84	0.93	1621	7.05	6.56	0.93	1718	6.84	6.36	0.93	1756	6.60	6.14	0.93	1834
32	22	7.65	6.20	0.81	1679	7.38	5.98	0.81	1785	7.20	5.83	0.81	1834	6.90	5.59	0.81	1911
32	24	8.04	5.55	0.69	1756	7.74	5.34	0.69	1853	7.56	5.22	0.69	1911	7.32	5.05	0.69	2007
32	26	8.28	4.72	0.57	1853	8.04	4.58	0.57	1949	7.92	4.51	0.57	2007	7.68	4.38	0.57	2065

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation **Rated frequency 87Hz**

MSZ-GA60VA -E1 : MUZ-G60VA -E1

CAPACITY:6.0(kW) SHF:0.79 INPUT:1930(W)

		OUTDOOR DB(℃)											
INDOOR DB (℃)	INDOOR WB (℃)	35				40				43			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	3.59	0.61	1891	5.40	3.29	0.61	2007	5.19	3.17	0.61	2046
21	20	6.18	3.03	0.49	1969	5.76	2.82	0.49	2065	5.55	2.72	0.49	2123
22	18	5.88	3.82	0.65	1891	5.40	3.51	0.65	2007	5.19	3.37	0.65	2046
22	20	6.18	3.28	0.53	1969	5.76	3.05	0.53	2065	5.55	2.94	0.53	2123
22	22	6.54	2.68	0.41	2046	6.12	2.51	0.41	2162	5.91	2.42	0.41	2200
23	18	5.88	4.06	0.69	1891	5.40	3.73	0.69	2007	5.19	3.58	0.69	2046
23	20	6.18	3.52	0.57	1969	5.76	3.28	0.57	2065	5.55	3.16	0.57	2123
23	22	6.54	2.94	0.45	2046	6.12	2.75	0.45	2162	5.91	2.66	0.45	2200
24	18	5.88	4.29	0.73	1891	5.40	3.94	0.73	2007	5.19	3.79	0.73	2046
24	20	6.18	3.77	0.61	1969	5.76	3.51	0.61	2065	5.55	3.39	0.61	2123
24	22	6.54	3.20	0.49	2046	6.12	3.00	0.49	2162	5.91	2.90	0.49	2200
24	24	6.90	2.55	0.37	2123	6.48	2.40	0.37	2220	6.30	2.33	0.37	2268
25	18	5.88	4.53	0.77	1891	5.40	4.16	0.77	2007	5.19	4.00	0.77	2046
25	20	6.18	4.02	0.65	1969	5.76	3.74	0.65	2065	5.55	3.61	0.65	2123
25	22	6.54	3.47	0.53	2046	6.12	3.24	0.53	2162	5.91	3.13	0.53	2200
25	24	6.90	2.83	0.41	2123	6.48	2.66	0.41	2220	6.30	2.58	0.41	2268
26	18	5.88	4.76	0.81	1891	5.40	4.37	0.81	2007	5.19	4.20	0.81	2046
26	20	6.18	4.26	0.69	1969	5.76	3.97	0.69	2065	5.55	3.83	0.69	2123
26	22	6.54	3.73	0.57	2046	6.12	3.49	0.57	2162	5.91	3.37	0.57	2200
26	24	6.90	3.11	0.45	2123	6.48	2.92	0.45	2220	6.30	2.84	0.45	2268
26	26	7.26	2.40	0.33	2200	6.84	2.26	0.33	2297	6.63	2.19	0.33	2345
27	18	5.88	5.00	0.85	1891	5.40	4.59	0.85	2007	5.19	4.41	0.85	2046
27	20	6.18	4.51	0.73	1969	5.76	4.20	0.73	2065	5.55	4.05	0.73	2123
27	22	6.54	3.99	0.61	2046	6.12	3.73	0.61	2162	5.91	3.61	0.61	2200
27	24	6.90	3.38	0.49	2123	6.48	3.18	0.49	2220	6.30	3.09	0.49	2268
27	26	7.26	2.69	0.37	2200	6.84	2.53	0.37	2297	6.63	2.45	0.37	2345
28	18	5.88	5.23	0.89	1891	5.40	4.81	0.89	2007	5.19	4.62	0.89	2046
28	20	6.18	4.76	0.77	1969	5.76	4.44	0.77	2065	5.55	4.27	0.77	2123
28	22	6.54	4.25	0.65	2046	6.12	3.98	0.65	2162	5.91	3.84	0.65	2200
28	24	6.90	3.66	0.53	2123	6.48	3.43	0.53	2220	6.30	3.34	0.53	2268
28	26	7.26	2.98	0.41	2200	6.84	2.80	0.41	2297	6.63	2.72	0.41	2345
29	18	5.88	5.47	0.93	1891	5.40	5.02	0.93	2007	5.19	4.83	0.93	2046
29	20	6.18	5.01	0.81	1969	5.76	4.67	0.81	2065	5.55	4.50	0.81	2123
29	22	6.54	4.51	0.69	2046	6.12	4.22	0.69	2162	5.91	4.08	0.69	2200
29	24	6.90	3.93	0.57	2123	6.48	3.69	0.57	2220	6.30	3.59	0.57	2268
29	26	7.26	3.27	0.45	2200	6.84	3.08	0.45	2297	6.63	2.98	0.45	2345
30	18	5.88	5.70	0.97	1891	5.40	5.24	0.97	2007	5.19	5.03	0.97	2046
30	20	6.18	5.25	0.85	1969	5.76	4.90	0.85	2065	5.55	4.72	0.85	2123
30	22	6.54	4.77	0.73	2046	6.12	4.47	0.73	2162	5.91	4.31	0.73	2200
30	24	6.90	4.21	0.61	2123	6.48	3.95	0.61	2220	6.30	3.84	0.61	2268
30	26	7.26	3.56	0.49	2200	6.84	3.35	0.49	2297	6.63	3.25	0.49	2345
31	18	5.88	5.94	1.01	1891	5.40	5.45	1.01	2007	5.19	5.24	1.01	2046
31	20	6.18	5.50	0.89	1969	5.76	5.13	0.89	2065	5.55	4.94	0.89	2123
31	22	6.54	5.04	0.77	2046	6.12	4.71	0.77	2162	5.91	4.55	0.77	2200
31	24	6.90	4.49	0.65	2123	6.48	4.21	0.65	2220	6.30	4.10	0.65	2268
31	26	7.26	3.85	0.53	2200	6.84	3.63	0.53	2297	6.63	3.51	0.53	2345
32	18	5.88	6.17	1.05	1891	5.40	5.67	1.05	2007	5.19	5.45	1.05	2046
32	20	6.18	5.75	0.93	1969	5.76	5.36	0.93	2065	5.55	5.16	0.93	2123
32	22	6.54	5.30	0.81	2046	6.12	4.96	0.81	2162	5.91	4.79	0.81	2200
32	24	6.90	4.76	0.69	2123	6.48	4.47	0.69	2220	6.30	4.35	0.69	2268
32	26	7.26	4.14	0.57	2200	6.84	3.90	0.57	2297	6.63	3.78	0.57	2345

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation Rated frequency 62Hz

MSZ-GA71VA -E1 : MUZ-GA71VA -E1

CAPACITY:7.1(kW) SHF:0.71 INPUT:2420(W)

INDOOR DB(℃)	INDOOR WB(℃)	OUTDOOR DB(℃) 21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	8.34	4.42	0.53	1936	7.99	4.23	0.53	2033	7.67	4.06	0.53	2130	7.38	3.91	0.53	2226
21	20	8.70	3.57	0.41	2033	8.34	3.42	0.41	2154	8.09	3.32	0.41	2202	7.81	3.20	0.41	2299
22	18	8.34	4.76	0.57	1936	7.99	4.55	0.57	2033	7.67	4.37	0.57	2130	7.38	4.21	0.57	2226
22	20	8.70	3.91	0.45	2033	8.34	3.75	0.45	2154	8.09	3.64	0.45	2202	7.81	3.51	0.45	2299
22	22	9.05	2.99	0.33	2105	8.73	2.88	0.33	2239	8.52	2.81	0.33	2299	8.17	2.69	0.33	2396
23	18	8.34	5.09	0.61	1936	7.99	4.87	0.61	2033	7.67	4.68	0.61	2130	7.38	4.50	0.61	2226
23	20	8.70	4.26	0.49	2033	8.34	4.09	0.49	2154	8.09	3.97	0.49	2202	7.81	3.83	0.49	2299
23	22	9.05	3.35	0.37	2105	8.73	3.23	0.37	2239	8.52	3.15	0.37	2299	8.17	3.02	0.37	2396
24	18	8.34	5.42	0.65	1936	7.99	5.19	0.65	2033	7.67	4.98	0.65	2130	7.38	4.80	0.65	2226
24	20	8.70	4.61	0.53	2033	8.34	4.42	0.53	2154	8.09	4.29	0.53	2202	7.81	4.14	0.53	2299
24	22	9.05	3.71	0.41	2105	8.73	3.58	0.41	2239	8.52	3.49	0.41	2299	8.17	3.35	0.41	2396
24	24	9.51	2.76	0.29	2202	9.16	2.66	0.29	2323	8.95	2.59	0.29	2396	8.66	2.51	0.29	2517
25	18	8.34	5.76	0.69	1936	7.99	5.51	0.69	2033	7.67	5.29	0.69	2130	7.38	5.09	0.69	2226
25	20	8.70	4.96	0.57	2033	8.34	4.76	0.57	2154	8.09	4.61	0.57	2202	7.81	4.45	0.57	2299
25	22	9.05	4.07	0.45	2105	8.73	3.93	0.45	2239	8.52	3.83	0.45	2299	8.17	3.67	0.45	2396
25	24	9.51	3.14	0.33	2202	9.16	3.02	0.33	2323	8.95	2.95	0.33	2396	8.66	2.86	0.33	2517
26	18	8.34	6.09	0.73	1936	7.99	5.83	0.73	2033	7.67	5.60	0.73	2130	7.38	5.39	0.73	2226
26	20	8.70	5.31	0.61	2033	8.34	5.09	0.61	2154	8.09	4.94	0.61	2202	7.81	4.76	0.61	2299
26	22	9.05	4.44	0.49	2105	8.73	4.28	0.49	2239	8.52	4.17	0.49	2299	8.17	4.00	0.49	2396
26	24	9.51	3.52	0.37	2202	9.16	3.39	0.37	2323	8.95	3.31	0.37	2396	8.66	3.20	0.37	2517
26	26	9.80	2.45	0.25	2323	9.51	2.38	0.25	2444	9.37	2.34	0.25	2517	9.09	2.27	0.25	2589
27	18	8.34	6.42	0.77	1936	7.99	6.15	0.77	2033	7.67	5.90	0.77	2130	7.38	5.69	0.77	2226
27	20	8.70	5.65	0.65	2033	8.34	5.42	0.65	2154	8.09	5.26	0.65	2202	7.81	5.08	0.65	2299
27	22	9.05	4.80	0.53	2105	8.73	4.63	0.53	2239	8.52	4.52	0.53	2299	8.17	4.33	0.53	2396
27	24	9.51	3.90	0.41	2202	9.16	3.76	0.41	2323	8.95	3.67	0.41	2396	8.66	3.55	0.41	2517
27	26	9.80	2.84	0.29	2323	9.51	2.76	0.29	2444	9.37	2.72	0.29	2517	9.09	2.64	0.29	2589
28	18	8.34	6.76	0.81	1936	7.99	6.47	0.81	2033	7.67	6.21	0.81	2130	7.38	5.98	0.81	2226
28	20	8.70	6.00	0.69	2033	8.34	5.76	0.69	2154	8.09	5.58	0.69	2202	7.81	5.39	0.69	2299
28	22	9.05	5.16	0.57	2105	8.73	4.98	0.57	2239	8.52	4.86	0.57	2299	8.17	4.65	0.57	2396
28	24	9.51	4.28	0.45	2202	9.16	4.12	0.45	2323	8.95	4.03	0.45	2396	8.66	3.90	0.45	2517
28	26	9.80	3.23	0.33	2323	9.51	3.14	0.33	2444	9.37	3.09	0.33	2517	9.09	3.00	0.33	2589
29	18	8.34	7.09	0.85	1936	7.99	6.79	0.85	2033	7.67	6.52	0.85	2130	7.38	6.28	0.85	2226
29	20	8.70	6.35	0.73	2033	8.34	6.09	0.73	2154	8.09	5.91	0.73	2202	7.81	5.70	0.73	2299
29	22	9.05	5.52	0.61	2105	8.73	5.33	0.61	2239	8.52	5.20	0.61	2299	8.17	4.98	0.61	2396
29	24	9.51	4.66	0.49	2202	9.16	4.49	0.49	2323	8.95	4.38	0.49	2396	8.66	4.24	0.49	2517
29	26	9.80	3.63	0.37	2323	9.51	3.52	0.37	2444	9.37	3.47	0.37	2517	9.09	3.36	0.37	2589
30	18	8.34	7.42	0.89	1936	7.99	7.11	0.89	2033	7.67	6.82	0.89	2130	7.38	6.57	0.89	2226
30	20	8.70	6.70	0.77	2033	8.34	6.42	0.77	2154	8.09	6.23	0.77	2202	7.81	6.01	0.77	2299
30	22	9.05	5.88	0.65	2105	8.73	5.68	0.65	2239	8.52	5.54	0.65	2299	8.17	5.31	0.65	2396
30	24	9.51	5.04	0.53	2202	9.16	4.85	0.53	2323	8.95	4.74	0.53	2396	8.66	4.59	0.53	2517
30	26	9.80	4.02	0.41	2323	9.51	3.90	0.41	2444	9.37	3.84	0.41	2517	9.09	3.73	0.41	2589
31	18	8.34	7.76	0.93	1936	7.99	7.43	0.93	2033	7.67	7.13	0.93	2130	7.38	6.87	0.93	2226
31	20	8.70	7.04	0.81	2033	8.34	6.76	0.81	2154	8.09	6.56	0.81	2202	7.81	6.33	0.81	2299
31	22	9.05	6.25	0.69	2105	8.73	6.03	0.69	2239	8.52	5.88	0.69	2299	8.17	5.63	0.69	2396
31	24	9.51	5.42	0.57	2202	9.16	5.22	0.57	2323	8.95	5.10	0.57	2396	8.66	4.94	0.57	2517
31	26	9.80	4.41	0.45	2323	9.51	4.28	0.45	2444	9.37	4.22	0.45	2517	9.09	4.09	0.45	2589
32	18	8.34	8.09	0.97	1936	7.99	7.75	0.97	2033	7.67	7.44	0.97	2130	7.38	7.16	0.97	2226
32	20	8.70	7.39	0.85	2033	8.34	7.09	0.85	2154	8.09	6.88	0.85	2202	7.81	6.64	0.85	2299
32	22	9.05	6.61	0.73	2105	8.73	6.38	0.73	2239	8.52	6.22	0.73	2299	8.17	5.96	0.73	2396
32	24	9.51	5.80	0.61	2202	9.16	5.59	0.61	2323	8.95	5.46	0.61	2396	8.66	5.28	0.61	2517
32	26	9.80	4.80	0.49	2323	9.51	4.66	0.49	2444	9.37	4.59	0.49	2517	9.09	4.45	0.49	2589

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation **Rated frequency 62Hz**

MSZ-GA71VA -E1 : MUZ-GA71VA -E1

CAPACITY:7.1(kW) SHF:0.71 INPUT:2420(W)

		OUTDOOR DB(℃)											
INDOOR DB (℃)	INDOOR WB (℃)	35				40				43			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	6.96	3.69	0.53	2372	6.39	3.39	0.53	2517	6.14	3.25	0.53	2565
21	20	7.31	3.00	0.41	2468	6.82	2.79	0.41	2589	6.57	2.69	0.41	2662
22	18	6.96	3.97	0.57	2372	6.39	3.64	0.57	2517	6.14	3.50	0.57	2565
22	20	7.31	3.29	0.45	2468	6.82	3.07	0.45	2589	6.57	2.96	0.45	2662
22	22	7.74	2.55	0.33	2565	7.24	2.39	0.33	2710	6.99	2.31	0.33	2759
23	18	6.96	4.24	0.61	2372	6.39	3.90	0.61	2517	6.14	3.75	0.61	2565
23	20	7.31	3.58	0.49	2468	6.82	3.34	0.49	2589	6.57	3.22	0.49	2662
23	22	7.74	2.86	0.37	2565	7.24	2.68	0.37	2710	6.99	2.59	0.37	2759
24	18	6.96	4.52	0.65	2372	6.39	4.15	0.65	2517	6.14	3.99	0.65	2565
24	20	7.31	3.88	0.53	2468	6.82	3.61	0.53	2589	6.57	3.48	0.53	2662
24	22	7.74	3.17	0.41	2565	7.24	2.97	0.41	2710	6.99	2.87	0.41	2759
24	24	8.17	2.37	0.29	2662	7.67	2.22	0.29	2783	7.46	2.16	0.29	2844
25	18	6.96	4.80	0.69	2372	6.39	4.41	0.69	2517	6.14	4.24	0.69	2565
25	20	7.31	4.17	0.57	2468	6.82	3.89	0.57	2589	6.57	3.74	0.57	2662
25	22	7.74	3.48	0.45	2565	7.24	3.26	0.45	2710	6.99	3.15	0.45	2759
25	24	8.17	2.69	0.33	2662	7.67	2.53	0.33	2783	7.46	2.46	0.33	2844
26	18	6.96	5.08	0.73	2372	6.39	4.66	0.73	2517	6.14	4.48	0.73	2565
26	20	7.31	4.46	0.61	2468	6.82	4.16	0.61	2589	6.57	4.01	0.61	2662
26	22	7.74	3.79	0.49	2565	7.24	3.55	0.49	2710	6.99	3.43	0.49	2759
26	24	8.17	3.02	0.37	2662	7.67	2.84	0.37	2783	7.46	2.76	0.37	2844
26	26	8.59	2.15	0.25	2759	8.09	2.02	0.25	2880	7.85	1.96	0.25	2940
27	18	6.96	5.36	0.77	2372	6.39	4.92	0.77	2517	6.14	4.73	0.77	2565
27	20	7.31	4.75	0.65	2468	6.82	4.43	0.65	2589	6.57	4.27	0.65	2662
27	22	7.74	4.10	0.53	2565	7.24	3.84	0.53	2710	6.99	3.71	0.53	2759
27	24	8.17	3.35	0.41	2662	7.67	3.14	0.41	2783	7.46	3.06	0.41	2844
27	26	8.59	2.49	0.29	2759	8.09	2.35	0.29	2880	7.85	2.28	0.29	2940
28	18	6.96	5.64	0.81	2372	6.39	5.18	0.81	2517	6.14	4.97	0.81	2565
28	20	7.31	5.05	0.69	2468	6.82	4.70	0.69	2589	6.57	4.53	0.69	2662
28	22	7.74	4.41	0.57	2565	7.24	4.13	0.57	2710	6.99	3.99	0.57	2759
28	24	8.17	3.67	0.45	2662	7.67	3.45	0.45	2783	7.46	3.35	0.45	2844
28	26	8.59	2.84	0.33	2759	8.09	2.67	0.33	2880	7.85	2.59	0.33	2940
29	18	6.96	5.91	0.85	2372	6.39	5.43	0.85	2517	6.14	5.22	0.85	2565
29	20	7.31	5.34	0.73	2468	6.82	4.98	0.73	2589	6.57	4.79	0.73	2662
29	22	7.74	4.72	0.61	2565	7.24	4.42	0.61	2710	6.99	4.27	0.61	2759
29	24	8.17	4.00	0.49	2662	7.67	3.76	0.49	2783	7.46	3.65	0.49	2844
29	26	8.59	3.18	0.37	2759	8.09	2.99	0.37	2880	7.85	2.90	0.37	2940
30	18	6.96	6.19	0.89	2372	6.39	5.69	0.89	2517	6.14	5.47	0.89	2565
30	20	7.31	5.63	0.77	2468	6.82	5.25	0.77	2589	6.57	5.06	0.77	2662
30	22	7.74	5.03	0.65	2565	7.24	4.71	0.65	2710	6.99	4.55	0.65	2759
30	24	8.17	4.33	0.53	2662	7.67	4.06	0.53	2783	7.46	3.95	0.53	2844
30	26	8.59	3.52	0.41	2759	8.09	3.32	0.41	2880	7.85	3.22	0.41	2940
31	18	6.96	6.47	0.93	2372	6.39	5.94	0.93	2517	6.14	5.71	0.93	2565
31	20	7.31	5.92	0.81	2468	6.82	5.52	0.81	2589	6.57	5.32	0.81	2662
31	22	7.74	5.34	0.69	2565	7.24	5.00	0.69	2710	6.99	4.83	0.69	2759
31	24	8.17	4.65	0.57	2662	7.67	4.37	0.57	2783	7.46	4.25	0.57	2844
31	26	8.59	3.87	0.45	2759	8.09	3.64	0.45	2880	7.85	3.53	0.45	2940
32	18	6.96	6.75	0.97	2372	6.39	6.20	0.97	2517	6.14	5.96	0.97	2565
32	20	7.31	6.22	0.85	2468	6.82	5.79	0.85	2589	6.57	5.58	0.85	2662
32	22	7.74	5.65	0.73	2565	7.24	5.29	0.73	2710	6.99	5.11	0.73	2759
32	24	8.17	4.98	0.61	2662	7.67	4.68	0.61	2783	7.46	4.55	0.61	2844
32	26	8.59	4.21	0.49	2759	8.09	3.97	0.49	2880	7.85	3.84	0.49	2940

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA HEAT operation

MSZ-GA50VA -E1 : MUZ-GA50VA -E1 Rated frequency 81Hz

CAPACITY:5.9(kW) INPUT:1630(W)

INDOOR DB(℃)	OUTDOOR WB(℃)													
	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	3.72	1060	4.48	1271	5.25	1434	6.02	1549	6.79	1646	7.49	1695	8.26	1728
21	3.54	1141	4.25	1353	5.02	1500	5.72	1614	6.49	1695	7.20	1744	7.94	1809
26	3.19	1223	3.95	1434	4.66	1581	5.43	1695	6.20	1777	6.90	1826	7.67	1875

MSZ-GA60VA -E1 : MUZ-GA60VA -E1 Rated frequency 96Hz

CAPACITY:6.8(kW) INPUT:1940(W)

INDOOR DB(℃)	OUTDOOR WB(℃)													
	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	4.28	1261	5.17	1513	6.05	1707	6.94	1843	7.82	1959	8.64	2018	9.52	2056
21	4.08	1358	4.90	1610	5.78	1785	6.60	1921	7.48	2018	8.30	2076	9.15	2153
26	3.67	1455	4.56	1707	5.37	1882	6.26	2018	7.14	2115	7.96	2173	8.84	2231

MSZ-GA71VA -E1 : MUZ-GA71VA -E1 Rated frequency 66Hz

CAPACITY:8.1(kW) INPUT:2450(W)

INDOOR DB(℃)	OUTDOOR WB(℃)													
	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	5.10	1593	6.16	1911	7.21	2156	8.26	2328	9.32	2475	10.29	2548	11.34	2597
21	4.86	1715	5.83	2034	6.89	2254	7.86	2426	8.91	2548	9.88	2622	10.89	2720
26	4.37	1838	5.43	2156	6.40	2377	7.45	2548	8.51	2671	9.48	2744	10.53	2818

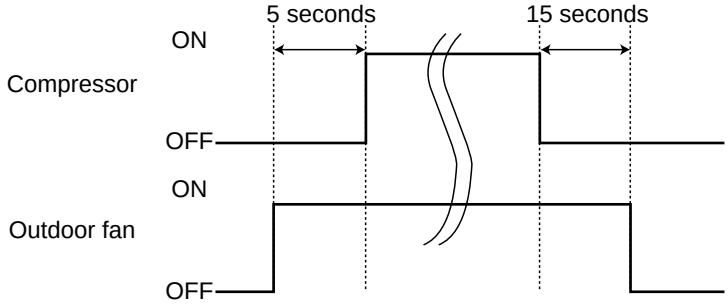
NOTE Q : Total capacity (kW) INPUT : Total power input (W) DB : Dry-bulb temperature WB : Wet-bulb temperature

9 ACTUATOR CONTROL

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

9-1. Outdoor fan motor control

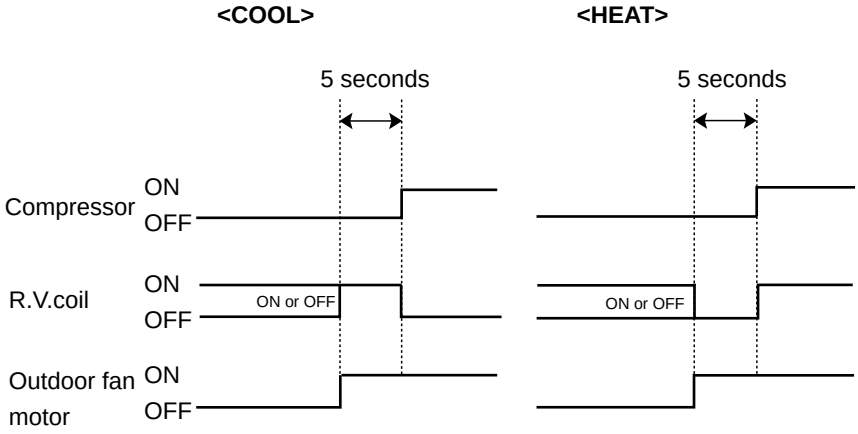
The fan motor turns ON/OFF, interlocking with the compressor.
[ON] The fan motor turns ON 5 seconds before the compressor starts up.
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



9-2. R.V. coil control

Heating ..... ON
Cooling..... OFF
Dry..... OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



9-3. Relation between main sensor and actuator

Relation between main sensor and actuator.

Sensor	Purpose	Actuator			
		Compressor	LEV	Outdoor fan motor	4-way valve
Discharge temperature thermistor	Protection	○	○		
Indoor pipe temperature thermistor	Defrosting Protection	○	○	○	
Defrost thermistor	Defrosting	○	○	○	○
Fin temperature thermistor	Protection	○		○	
Outdoor heat exchanger temperature	Protection	○	○	○	
Ambient temperature thermistor	Protection	○	○	○	

10 TROUBLESHOOTING

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

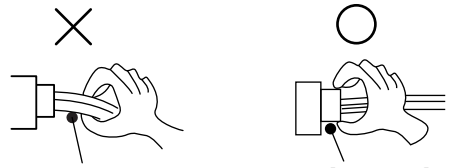
10-1. Cautions on troubleshooting

1. Before troubleshooting, check the following:

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for mis-wiring.

2. Take care the following during servicing.

1) Before servicing the air conditioner, be sure to turn OFF the unit first with the remote controller, and then after confirming the horizontal vane is closed, turn off the breaker and / or disconnect the power plug.
2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
3) When removing the electrical parts, be careful to the residual voltage of smoothing capacitor.
4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



3. Troubleshooting procedure

1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing on and off before starting service work.
2) Before servicing check that the connector and terminal are connected properly.
3) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) When troubleshooting, refer to 10-2., 10-3. and 10-4.

10-2. Failure mode recall function

Outline of the function

This air conditioner can memorize the abnormal condition which has occurred once.

Even though LED indication listed on the troubleshooting check table (10-4.) disappears, the memorized failure details can be recalled.

This mode is very useful when the unit needs to be repaired for the abnormality which doesn't recur.

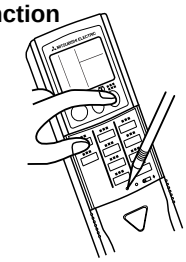
1. Flow chart of the indoor/outdoor unit failure mode recall function

Operational procedure

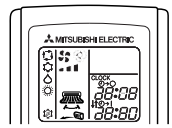
The cause of abnormality cannot be found because the abnormality doesn't recur.

Setting up the failure mode recall function

Turn ON the power supply.
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons since all LCD in operation display section of the remote controller is displayed after 3 seconds.



① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons since all LCD in operation display section of the remote controller displayed after 3 seconds.



※1
Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed).
With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 24℃.

※1. Regardless of normal or abnormal, a short beep is emitted once as the signal is received.

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal.
Beep sounds are emitted at the same timing of the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → Indoor unit is normal.
There is a possibility that the outdoor unit is abnormal.
Confirm the presence of abnormality according to the flow chart of the detailed outdoor unit failure mode recall function.

Yes (Blinks)

Judgment of indoor/outdoor abnormality

Before blinking, does the left lamp of OPERATION INDICATOR lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep):
The outdoor unit is abnormal.

Yes → The outdoor unit is abnormal.
Check the blinking pattern, and refer to confirm the abnormal point (10-2.3.).
Make sure to check at least two consecutive blinking cycles. ※3

No → The indoor unit is abnormal.
Check the blinking pattern, and refer to confirm the abnormal point.
Make sure to check at least two consecutive blinking cycles. ※2

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
①With the remote controller headed towards the indoor unit, press any button that is not used in this failure mode recall function (e.g. TIMER button) .
OR
①Turn OFF the power supply and turn ON it again.
②Press RESET button of the remote controller.

•As for indoor unit, refer to service manual OB378.

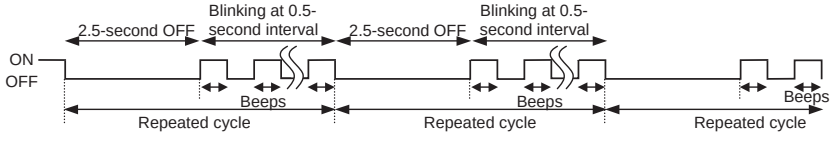
Repair the defective parts.

Deleting the abnormal condition

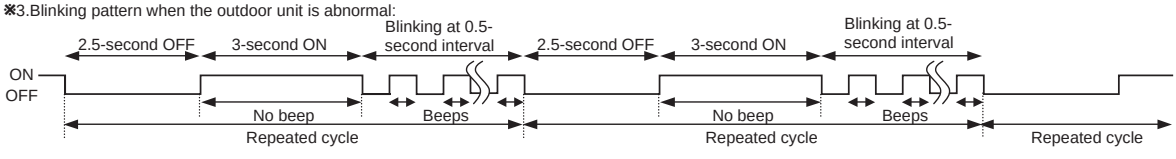
①After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
②Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
③Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

Note1.Make sure to release the failure mode recall function once it's set up, otherwise the unit cannot operate properly.
2.If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when the indoor unit is abnormal:



※3.Blinking pattern when the outdoor unit is abnormal:



2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

There is a possibility that the outdoor unit is abnormal.
Confirm the presence of abnormality according to the following procedures.

↓

Confirm that the remote controller is in the failure mode recall function.

↓

※1
With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 25℃.

※1. Regardless of normal or abnormal, 2 short beeps are emitted as the signal is received.

Confirmation of abnormality presence

↓

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds? ※2
Blinks: The outdoor unit is abnormal.
Beep sounds are emitted at the same timing of the blinking of the left lamp of OPERATION INDICATOR lamp.

No (OFF) → The outdoor unit is normal.

Yes (Blinks) ↓

The outdoor unit is abnormal.
Check the blinking pattern, and refer to confirm the abnormal point (10-2.3.).
Make sure to check at least two consecutive blinking cycles. ※2

↓

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
①With the remote controller headed towards the indoor unit, press any button that is not used in this failure mode recall function (e.g. TIMER button) .
OR
①Turn OFF the main power supply and turn ON it again.
②Press RESET button of the remote controller.

Release the failure mode recall function according to the left mentioned procedure.

↓

Repair the defective parts.

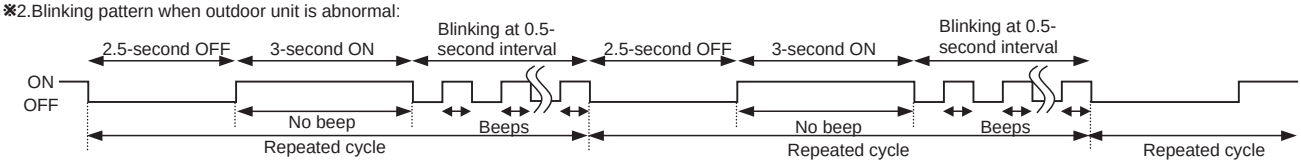
↓

Deleting the abnormal condition

①After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
②Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
③Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

Note 1. Make sure to release the failure mode recall function once it's set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2.Blinking pattern when outdoor unit is abnormal:



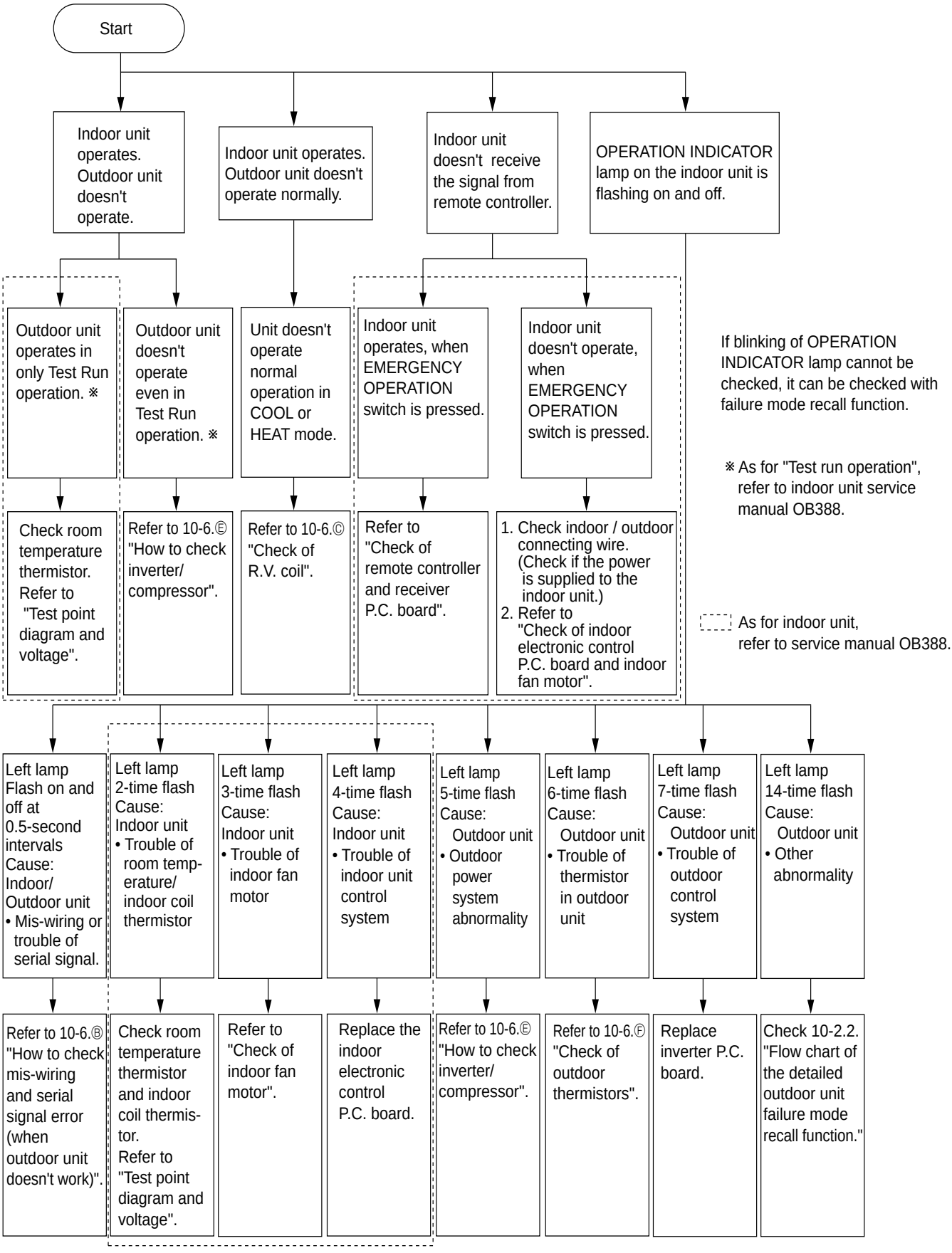
3. Failure mode table

With outdoor failure mode recall function, you can check the following failures.
With indoor/outdoor failure mode recall function, however, you can check the failures marked with "O" only.

Indoor operation indicator lamp	Abnormal point (Failure mode)	Details of abnormal point	Outdoor LED indication		Detecting method	Check point	Indoor/outdoor failure mode recall function
			LED1	LED2			
OFF	Normal	—	—		—	—	—
2-time flash	Outdoor power system	Outdoor power system	Lighting	Lighting	When IPM protection stop or lock protection stop is continuously performed three times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Check the inverter/compressor. (Refer to 10-6.Ⓔ.) • Check the stop valve. • Check the PAM module.	○
3-time flash	Outdoor thermistors	Discharge temperature thermistor	Lighting	Once	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Check the outdoor thermistors. (Refer to 10-6.Ⓕ.)	○
		Defrost thermistor	Lighting	Once	When a short circuit is detected during compressor operating, or when an open circuit is detected after 5 minutes of compressor start-up.		
		Ambient temperature thermistor	Lighting	Twice	When a short or open circuit is detected in the thermistor during operation.		
		Fin temperature thermistor	Lighting	3 times			
		P.C. board temperature thermistor	Lighting	4 times		• Replace the outdoor electronic control P.C. board.	
		Outdoor heat exchanger temperature thermistor	Lighting	9 times	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	• Check the outdoor thermistors. (Refer to 10-6.Ⓕ.)	
4-time flash	Overcurrent protection	IPM protection	Once	Goes out	When overcurrent is detected after 30 seconds of compressor start-up.	• Check the connection of the compressor connecting wire. • Check the inverter/ compressor. (Refer to 10-6.Ⓔ.) • Check the stop valve.	
		Lock protection	Once	Goes out	When overcurrent is detected within 30 seconds after the compressor gets started.		
5-time flash	Refrigerant system protection	Discharge temperature protection	Lighting	Lighting	When discharge temperature exceeds 116℃ during operation.	• Check the amount of gas and refrigerant circuit. • Check the LEV. (Refer to 10-6.Ⓓ.)	
6-time flash	High-pressure protection	HPS protection	Lighting	Lighting	When high-pressure is detected with the high-pressure switch (HPS) during operation.	• Check the amount of gas and the refrigerant circuit. • Check the stop valve.	
		High-pressure protection	Lighting	Lighting	When the outdoor heat exchanger temperature exceeds 70℃ during cooling or the indoor gas pipe temperature exceeds 70℃ during heating.		
7-time flash	Fin temperature/P.C. board temperature overheat protection	Fin temperature protection	3 times	Goes out	When the fin temperature exceeds 87℃ during operation.	• Check the surrounding of the outdoor unit. • Check the air passage. • Check the outdoor fan motor. (Refer to 10-6.Ⓖ.)	
		P.C. board temperature protection	4 times	Goes out	When the P.C. board temperature exceeds 70℃ during operation.		
8-time flash	Fan protection	Fan protection	Lighting	Lighting	When failure occurs continuously three times within 30 seconds after the fan gets started.	• Check the outdoor fan motor. (Refer to 10-6.Ⓖ.)	
9-time flash	Outdoor control system	EEPROM	Lighting	5 times	When the nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.	○
10-time flash	Low discharge temperature protection	Low discharge temperature protection	Lighting	Lighting	When the frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 39℃ for more than 20 minutes.	• Check the amount of gas and refrigerant circuit. • Check the LEV. (Refer to 10-6.Ⓓ.)	

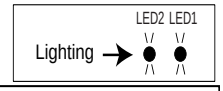
Indoor operation indicator lamp	Abnormal point (Failure mode)	Details of abnormal point	Outdoor LED indication		Detecting method	Check point	Indoor/outdoor failure mode recall function
			LED1	LED2			
OFF	Normal	—	—		—	—	—
11-time flash	Converter	Communication error between P.C. boards	Lighting	6 times	When the communication between boards protection stop is continuously performed twice.	• Check the connecting wire between outdoor electronic control P.C. board and power board.	○
		Communication between P.C. boards protection	Lighting	6 times	Communication error occurs between the electronic control P.C. board and power board for more than 10 seconds.		
		Current sensor	Lighting	7 times	Current sensor protection stop is continuously performed twice.	• Replace the power board.	○
		Current sensor protection	Lighting	7 times	When a short or open circuit is detected in the current sensor during compressor operating.		
		Zero cross detecting circuit	5 times	Goes out	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	• Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board.	○
		Zero cross detecting circuit protection	5 times	Goes out	When zero cross signal cannot be detected while the compressor is operating.		
		Converter protection	5 times	Goes out	When a failure is detected in the operation of the converter during operation.	• Replace the power board.	
		Bus-bar voltage protection (1)	5 times	Goes out	When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.		
		Bus-bar voltage protection (2) ※Even if this protection stop is performed continuously three times, it does not mean the abnormality in outdoor power system.	6 times	Goes out	When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.		

10-3. Instruction of troubleshooting



10-4. Troubleshooting check table

Outdoor electronic control P.C. board(Parts side)



NOTE 1. The location of LED is illustrated at the right figure.
2. LED lights up during normal operation.

Symptom: Outdoor unit does not operate.				
Indication		Abnormal point	Detecting method	Check points
LED1(Red)	LED2(Yellow)			
Lightning	Twice	Outdoor power system	When IPM protection stop or lock protection stop is continuously performed three times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Check the inverter/compressor. (Refer to 10-6.Ⓔ.) • Check the stop valve. • Check the power module (PAM module).
Lightning	3 times	Discharge temperature thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Check the discharge temperature thermistor. (Refer to 10-6.Ⓕ.)
Lightning	4 times	Fin temperature thermistor	When a short or open circuit is detected in the thermistor during operation.	• Check the fin temperature thermistor.(Refer to 10-6.Ⓕ.)
		P.C board temperature thermistor		• Replace the outdoor electronic control P.C. board.
Lightning	5 times	Ambient temperature thermistor	When a short or open circuit is detected in the thermistor during operation.	• Check the ambient temperature thermistor. (Refer to 10-6.Ⓕ.)
		Outdoor heat exchanger temperature thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	• Check the outdoor hear exchanger temperature thermistor. (Refer to 10-6.Ⓕ.)
		Defrost thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes of compressor start-up.	• Check the defrost thermistor. (Refer to 10-6.Ⓕ.)
Lightning	7 times	EEPROM	When the nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.
Lightning	8 times	Current sensor	Current sensor protection stop is continuously performed twice.	• Replace the power board.
Lightning	11 times	Communication error between P.C. boards	When the communication protection stop between boards is continuously performed twice.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
Lightning	12 times	Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.

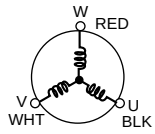
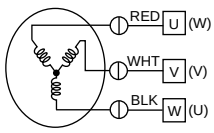
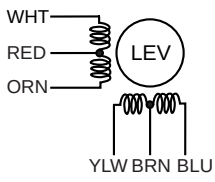
Symptom: It is repeated that outdoor unit stops and restarts 3 minutes later.				
Indication		Abnormal point	Detecting method	Check points
LED1	LED2			
Twice	Goes out	IPM protection	When over-current is detected after 30 minutes of compressor start-up.	• Check the connection of the compressor connecting wire. • Check the inverter/compressor.(Refer to 10-6.Ⓔ.) • Check the stop valve. • Check the power module.
		Lock protection	When over-current is detected within 30 minutes of compressor start-up	
3 times	Goes out	Discharge temperature protection	When the discharge temperature exceeds 116℃ during operation.	• Check the amount of gas and refrigerant circuit. • Check the LEV.(Refer to 10-6.Ⓓ.)
4 times	Goes out	Fin temperature protection	When the fin temperature exceeds 87℃ during operation.	• Check the surrounding of the outdoor unit. • Check the air passage. • Check the outdoor fan motor. (Refer to 10-6.Ⓖ.)
		P.C. board temperature protection	When the P.C. board temperature exceeds 70℃ during operation.	
5 times	Goes out	HPS protection	When high-pressure is detected with the high-pressure switch (HPS) during operation.	• Check the amount of gas and the refrigerant circuit. • Check the stop valve.
		High-pressure protection	When the outdoor heat exchanger temperature exceeds 70℃ during cooling or when indoor gas pipe temperature exceeds 70℃ during heating	
8 times	Goes out	Converter protection	When a failure is detected in the operation of the converter during operation.	• Replace the power board.
9 times	Goes out	Bus-bar voltage protection (1)	When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.	• Replace the power board.
		Bus-bar voltage protection (2)	When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.	• Replace the power board.
13 times	Goes out	Fan protection	When failure occurs continuously three times within 30 seconds after the fan gets started.	• Check the outdoor fan motor.(Refer to 10-6.Ⓖ.)
Lighting	8 times	Current sensor protection	When a short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.
Lighting	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
Lighting	12 times	Zero cross detecting circuit protection	When zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.

Symptom: Outdoor unit does not operate normally.				
Indication		Abnormal point	Detecting method	Check points
LED1	LED2			
Once	Lighting	Primary current protection	When the input current exceeds 15A.	These symptoms do not mean any abnormality of the product, but check the following points. • Indoor unit filter clogging • Amount of gas • Short cycle of indoor/outdoor air flow
		Secondary current protection	When the current of the compressor exceeds 15A.	
Twice	Lighting	High-pressure protection	When the indoor gas pipe temperature exceeds 45℃ during heating.	
		Defrosting in cooling	When the indoor gas pipe temperature falls 3℃ or below during cooling.	
3 times	Lighting	Discharge temperature protection	When the discharge temperature exceeds 100℃ during operation.	• Check the amount of gas and refrigerant circuit. • Check the LEV. (Refer to 10-6.Ⓓ.) • Check the outdoor thermistor. (Refer to 10-6.Ⓕ.)
4 times	Lighting	Low discharge temperature protection	When the frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 39℃ for more than 20 minutes.	• Check the amount of gas and refrigerant circuit. • Check the LEV. (Refer to 10-6.Ⓓ.)
5 times	Lighting	Cooling high-pressure protection	When the outdoor heat exchanger temperature exceeds 58℃ during operation.	This symptom does not mean any abnormality of the product, but check the following points. • Indoor unit filter clogging • Amount of gas • Short cycle of indoor/outdoor air flow

Symptom: Outdoor unit operates normally.				
Indication		Abnormal point	Detecting method	Check points
LED1	LED2			
9 times	Lighting	Service mode	When the unit is operated with the emergency operation switch.	—
Lighting	Lighting	Normal	—	—

10-5. Trouble criterion of main parts

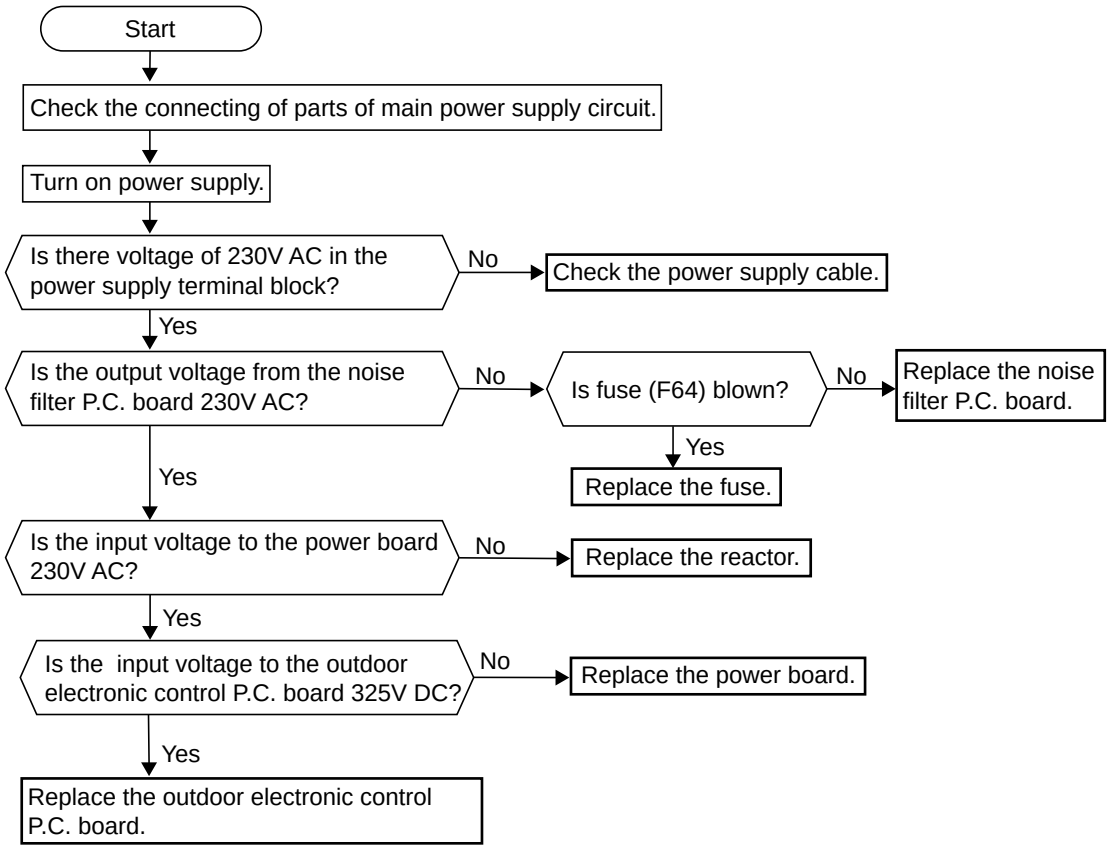
MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

<table>
<tr><th>Part name</th><th>Check method and criterion</th></tr>
<tr><td>Defrost thermistor/ Ambient temperature thermistor/ Outdoor heat exchanger temperature thermistor</td><td>Measure the resistance using a tester.
(Part temperature : -10°C ~ 40°C)
<table><tr><th>Normal</th><th>abnormal</th></tr><tr><td>5kΩ ~ 55kΩ</td><td>Open or short-circuit</td></tr></table></td></tr>
<tr><td>Discharge temperature thermistor</td><td>Measure the resistance using a tester, after warming up the thermistor by holding by hand.
(Part temperature : 20°C ~ 40°C)
<table><tr><th>Normal</th><th>abnormal</th></tr><tr><td>100kΩ ~ 250kΩ</td><td>Opened or short-circuit</td></tr></table></td></tr>
<tr><td>Fin temperature thermistor</td><td>Measure the resistance using a tester.
(Part temperature : 10°C ~ 40°C)
<table><tr><th>Normal</th><th>abnormal</th></tr><tr><td>25kΩ ~ 100kΩ</td><td>Open or short-circuit</td></tr></table></td></tr>
<tr><td>Compressor
 
</td><td>Measure the resistance between terminals using a tester.
(Winding temperature : -10°C ~ 40°C)
<table><tr><th colspan="2">Normal</th><th>abnormal</th></tr><tr><td>MUZ-GA50/GA60VA</td><td>MUZ-GA71VA</td><td rowspan="2">Open or short-circuit</td></tr><tr><td>0.40Ω ~ 0.49Ω</td><td>1.29Ω ~ 1.49Ω</td></tr></table></td></tr>
<tr><td>Outdoor fan motor
 
</td><td>Measure the resistance between lead wires using a tester.
(Part temperature : -10°C ~ 40°C)
<table><tr><th>Color of lead wire</th><th>Normal</th><th>abnormal</th></tr><tr><td>RED - BLK</td><td rowspan="3">13.4Ω ~ 16.4Ω</td><td rowspan="3">Open or short-circuit (Not including WHT - ORN)</td></tr><tr><td>BLK - WHT</td></tr><tr><td>WHT - RED</td></tr></table></td></tr>
<tr><td>R. V. coil</td><td>Measure the resistance using a tester. (Part temperature : -10°C ~ 40°C)
<table><tr><th>Normal</th><th>abnormal</th></tr><tr><td>2.6kΩ ~ 3.3kΩ</td><td>Open or short-circuit</td></tr></table></td></tr>
<tr><td>Linear expansion valve
 
</td><td>Measure the resistance using a tester.(Part temperature : -10°C ~ 40°C)
<table><tr><th>Color of lead wire</th><th>Normal</th><th>Abnormal</th></tr><tr><td>WHT - RED</td><td rowspan="4">37.4Ω ~ 53.9Ω</td><td rowspan="4">Open or short-circuit</td></tr><tr><td>RED - ORN</td></tr><tr><td>YLW - BRN</td></tr><tr><td>BRN - BLU</td></tr></table></td></tr>
<tr><td>High pressure switch (HPS)
MUZ-GA71VA</td><td>MUZ-GA71VA
<table><tr><th colspan="2">Pressure</th><th>Normal</th><th>abnormal</th></tr><tr><td colspan="2">Operation OFF</td><td rowspan="2">Short</td><td rowspan="3">Other than those listed at left</td></tr><tr><td rowspan="2">HPS1</td><td>3.7 ± 0.15MPa</td></tr><tr><td>$4.8^{+0.95}_{-0.1}$MPa</td><td>Open</td></tr></table></td></tr>
</table>

10-6. Troubleshooting flow

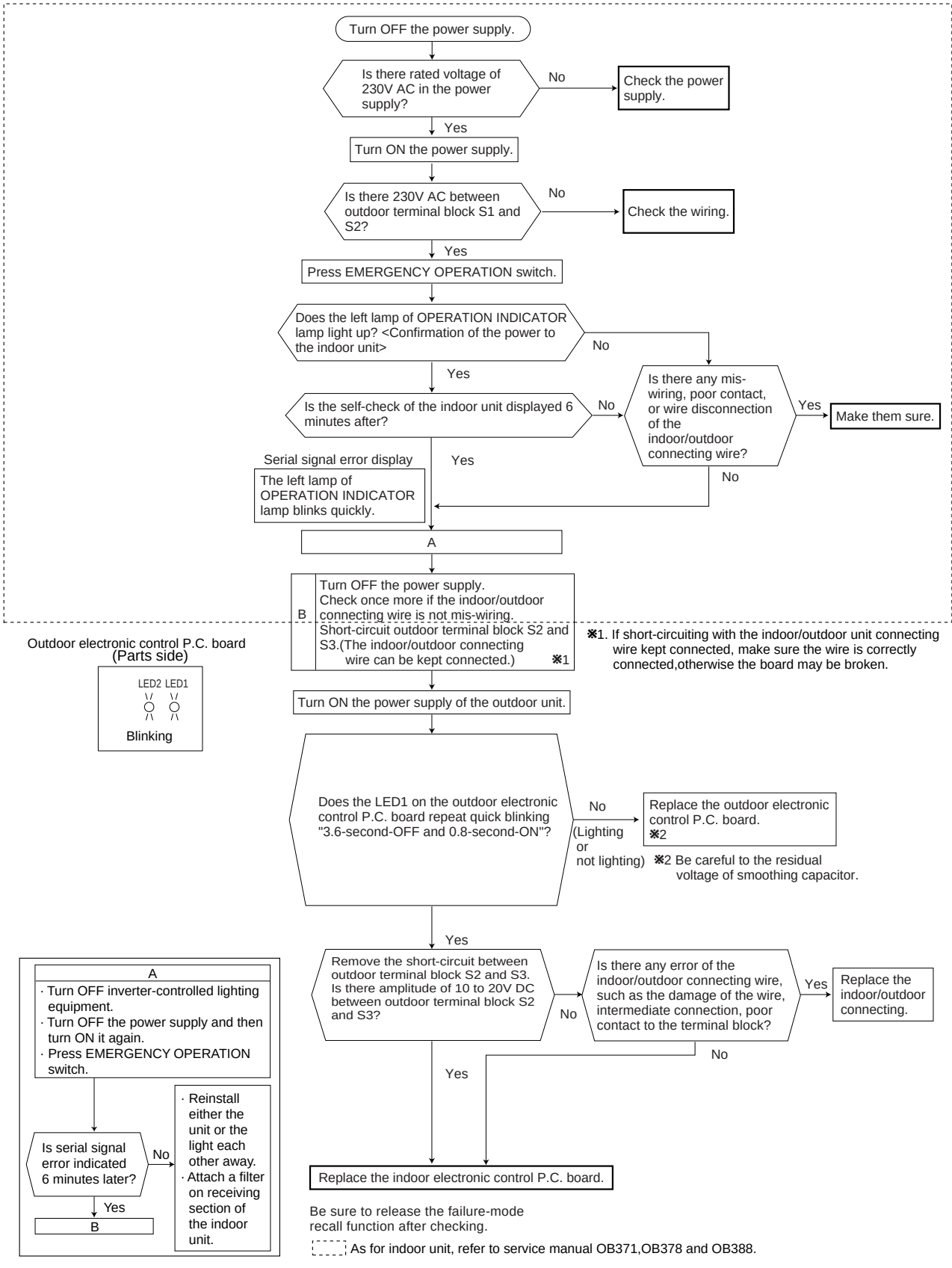
Outdoor unit does not operate. (LED display: display OFF)

Ⓐ Check of power supply



- **When unit cannot operate neither by the remote controller nor by EMERGENCY OPERATION switch. Indoor unit does not operate.**
- **When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second. Outdoor unit does not operate.**

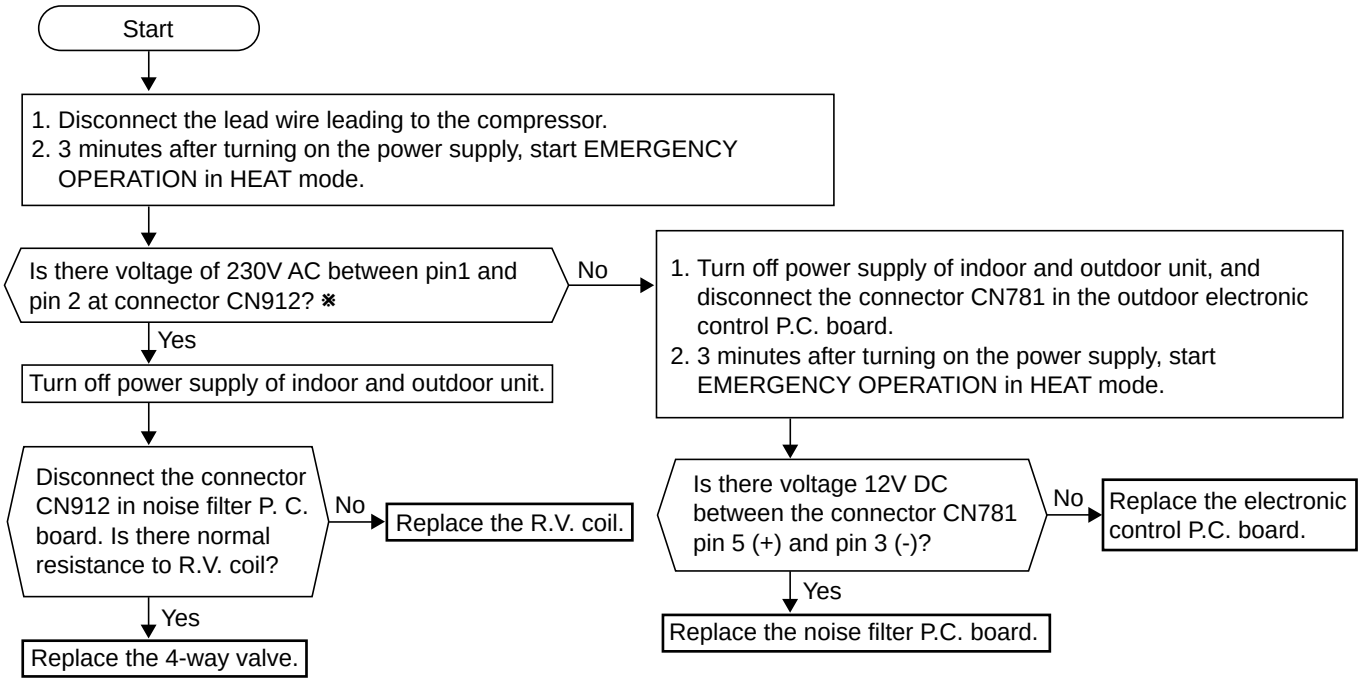
Ⓑ How to check mis-wiring and serial signal error (when outdoor unit does not work)



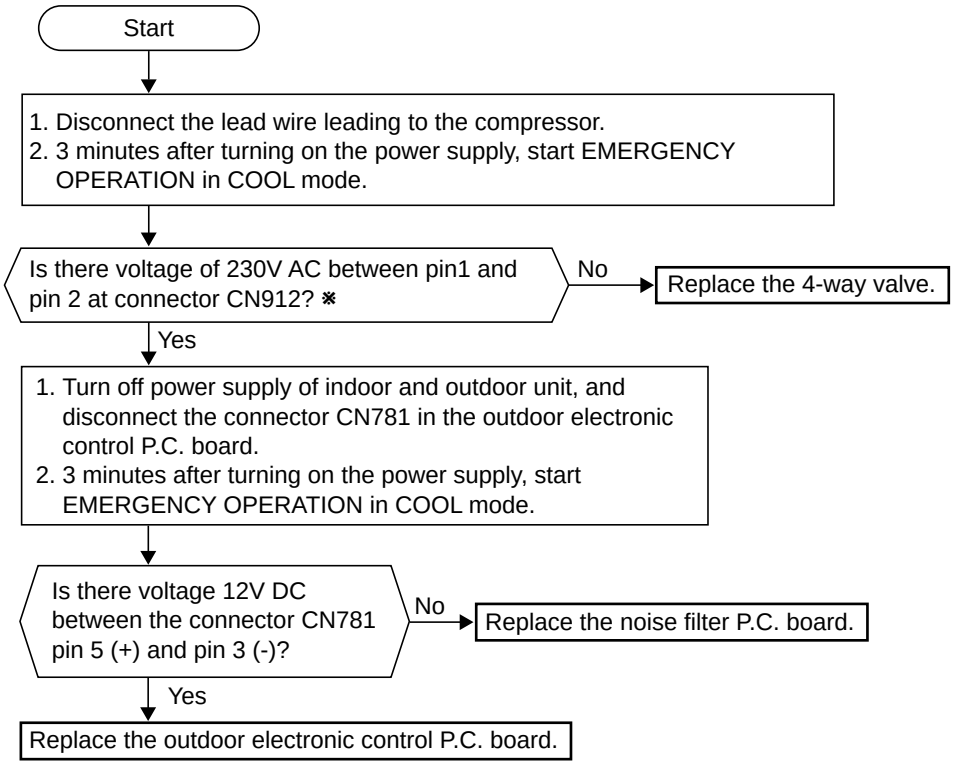
The cooling operation or heating operation does not operate. (LED display: Both LED1 and LED2 lighting)

© Check of R.V. coil

• When heating operation does not work.



• When cooling operation does not work.



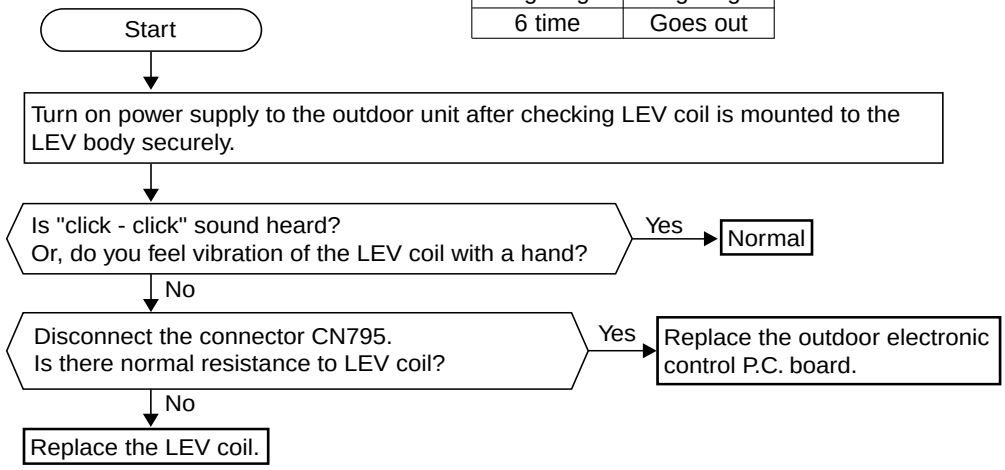
※ If the connector CN912 is not connected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

• When cooling, heat exchanger of non-operating indoor unit frosts.
• When heating, non-operating indoor unit get warm.

Ⓓ Check of LEV

LED display:

LED1	LED2
Lighting	Lighting
6 time	Goes out

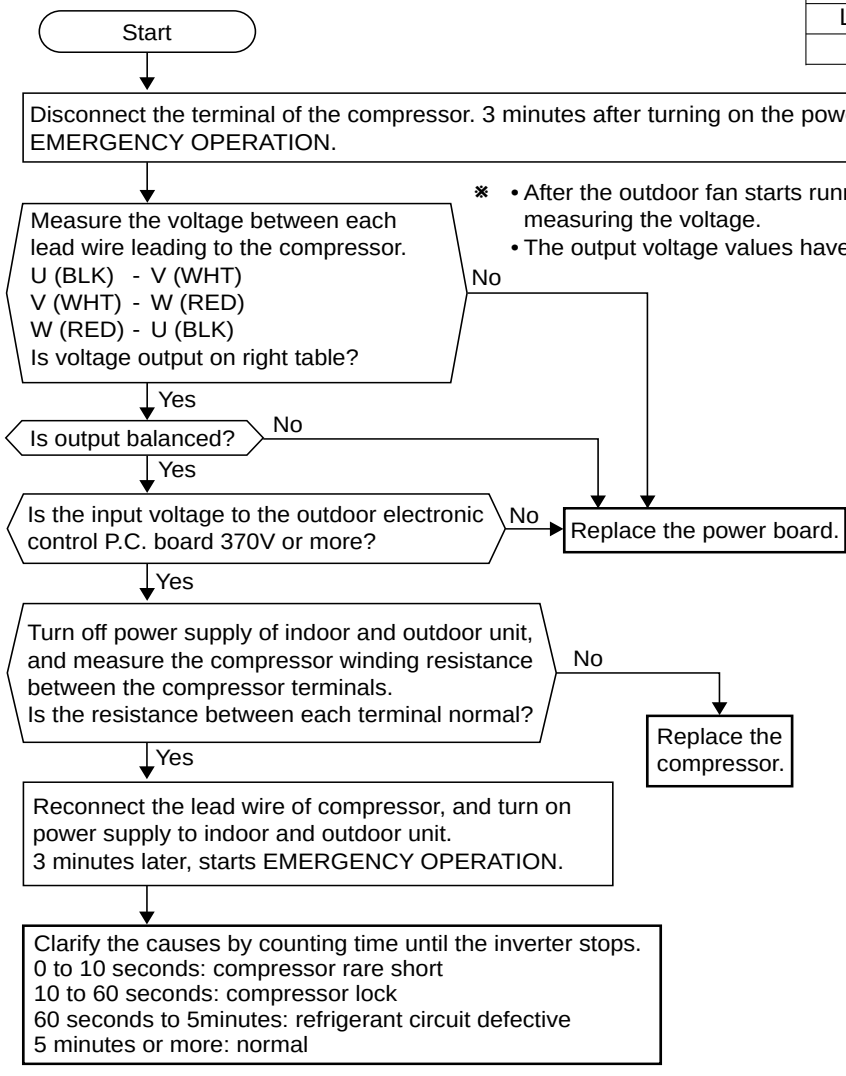


When OPERATION INDICATOR lamp flashes 5-time.
• When heating, room does not get warm.
• When cooling, room does not get cool.

Ⓔ How to check inverter/ compressor

LED display:

LED1	LED2
Lighting	Lighting
Lighting	Twice
Twice	Goes out

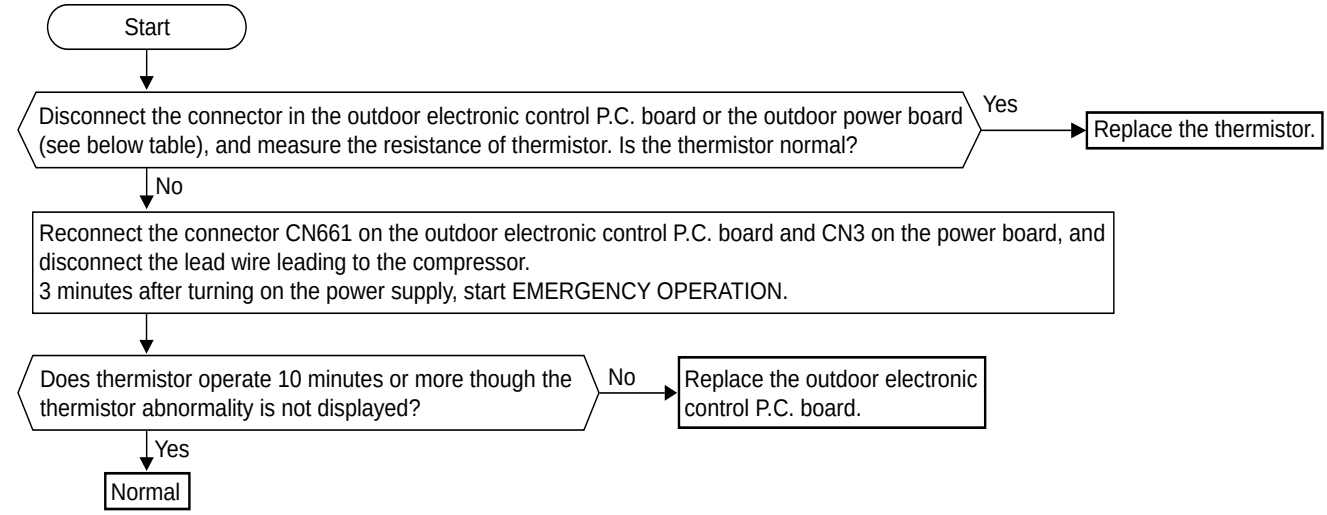


※ • After the outdoor fan starts running, wait for 1 minutes or more before measuring the voltage.
• The output voltage values have the tolerance of ±20%.

	COOL	HEAT
GA50	122V~154V (56Hz~71Hz)	74V~126V (30Hz~58Hz)
GA60	122V~187V (56Hz~87Hz)	74V~126V (30Hz~58Hz)
GA71	173V~197V (54Hz~62Hz)	115V~185V (34Hz~58Hz)

• When OPERATION INDICATOR lamp flashes 6-time.
• When thermistor is abnormal. (When the LED display is a table below.)

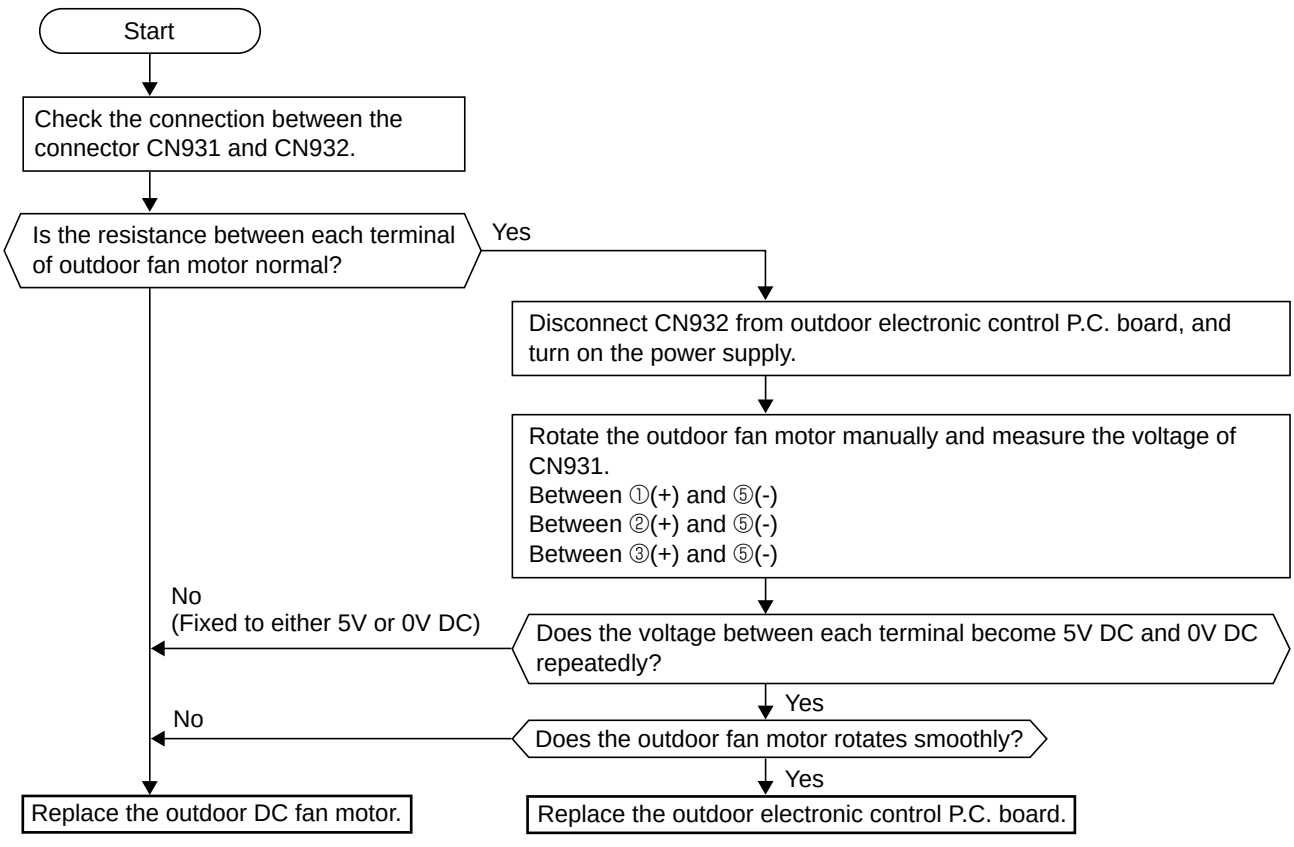
Ⓕ Check of outdoor thermistors



Thermistor	Symbol	Connector, Pin No.
Defrost thermistor	RT61	Between CN661 pin1 and pin2 on the outdoor electronic control P.C. board
Discharge temperature thermistor	RT62	Between CN661 pin3 and pin4 on the outdoor electronic control P.C. board
Outdoor heat exchanger temperature thermistor	RT68	Between CN661 pin7 and pin8 on the outdoor electronic control P.C. board
Fin temperature thermistor	RT64	Between CN3 pin1 and pin2 on the outdoor power board
Ambient temperature thermistor	RT65	Between CN663 pin1 and pin2 on the outdoor electronic control P.C. board

• Fan motor does not operate or stops operating shortly after starting the operation.

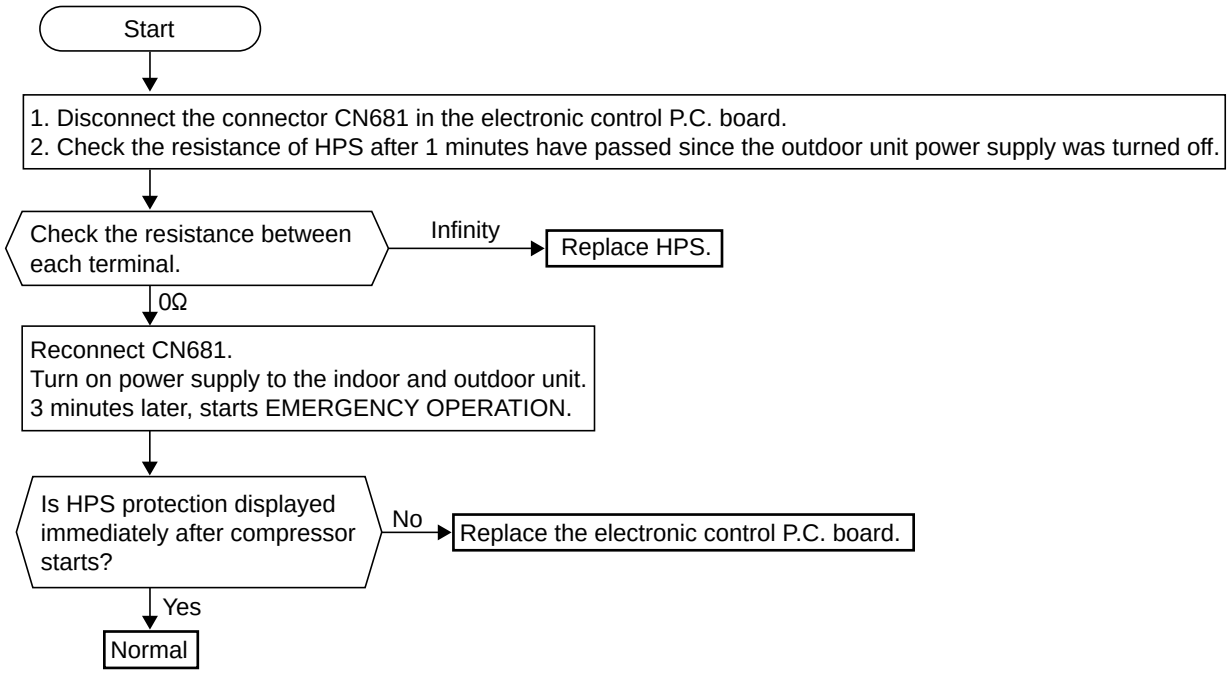
Ⓖ Check of outdoor fan motor



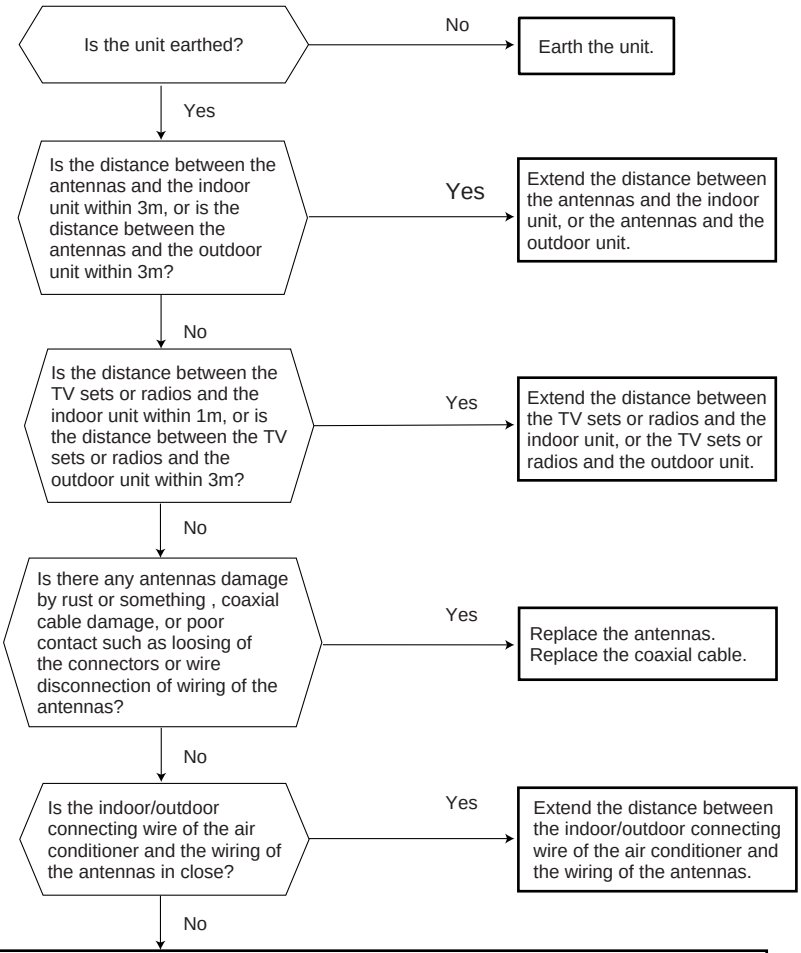
• When the operation frequency does not go up from lowest frequency.

Ⓗ Check of HPS

MUZ-GA71VA



Ⓘ Electromagnetic noise enters into TV sets or radios



Even if all of the above conditions is fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the followings before asking for service.

1.Devices affected by the electromagnetic noise
TV sets, radios (FM/AM broadcast, shortwave)
2.Channel, frequency, broadcast station affected by the electromagnetic noise
3.Channel, frequency, broadcast station unaffected by the electromagnetic noise
4.Layout of ;
indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, grounding wire, antennas, wiring from antennas, receiver
5.Electric field intensity of the broadcast station affected by the electromagnetic noise
6.Presence or absence of amplifier such as booster
7.Operation condition of air conditioner when the electromagnetic noise enters in.
1)Turn OFF the power supply once, and then turn ON the power supply. In this situation check for the electromagnetic noise.
2)Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power-on, and check for the electromagnetic noise.
3)After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
4)Press OPERATE/STOP (ON/OFF) button on the remote controller for power off, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation check for the electromagnetic noise.

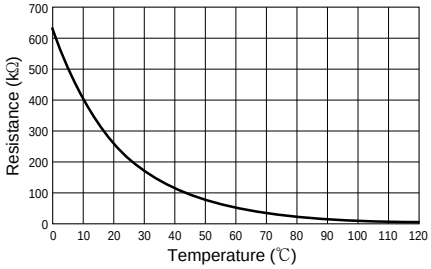
After checking the above, consult the service representative.

10-7. Test point diagram and voltage

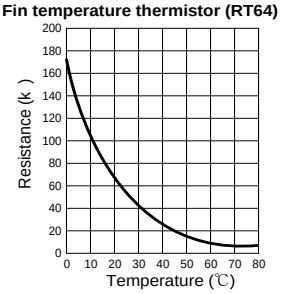
1. Outdoor electronic control P.C. board

MUZ-GA50VA - E1 **MUZ-GA60VA -** E1 **MUZ-GA71VA -** E1

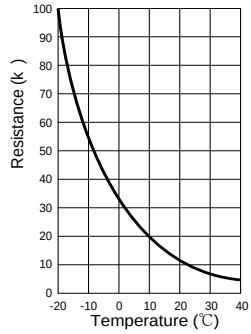
Discharge temperature thermistor (RT62)



Fin temperature thermistor (RT64)

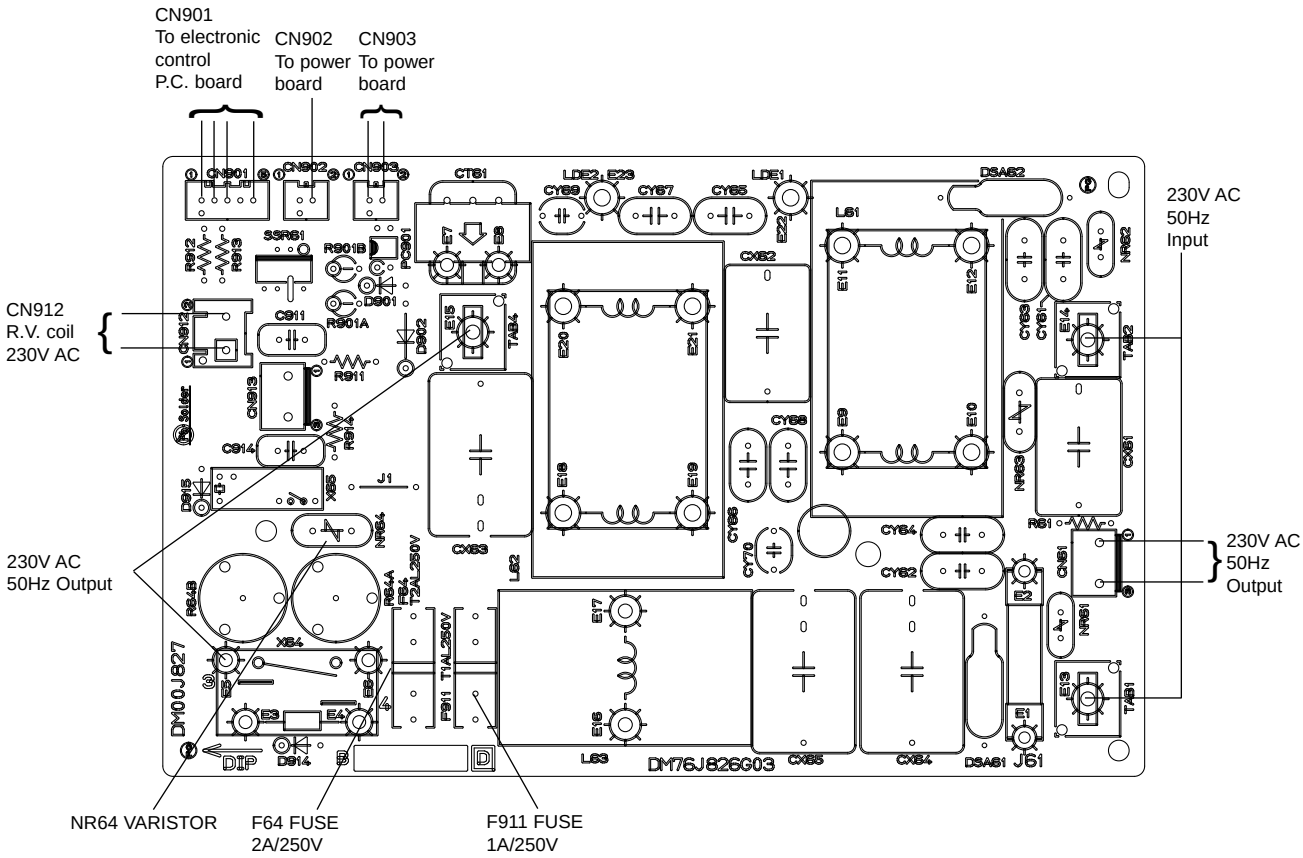


Defrost thermistor (RT61)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)



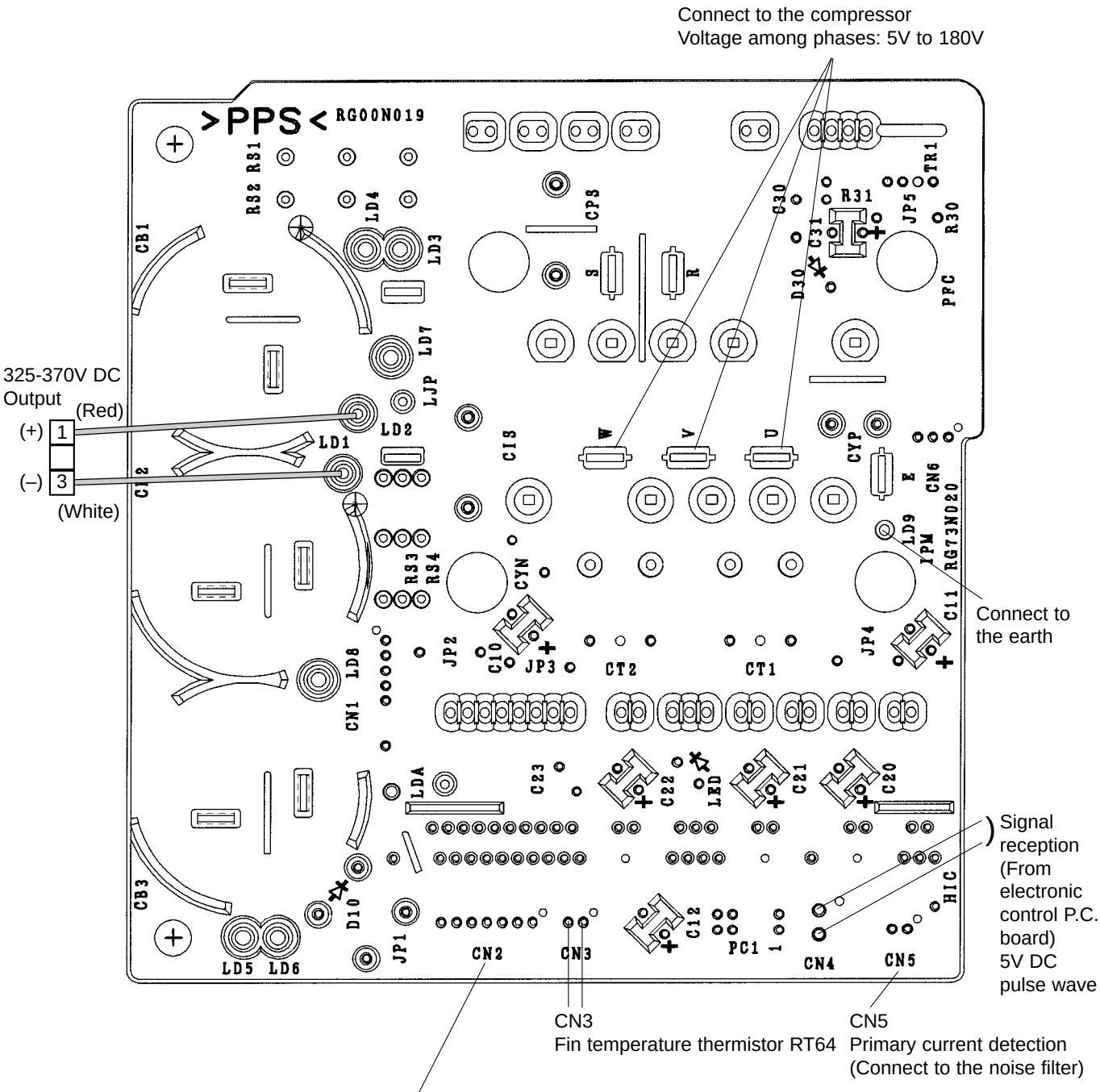
2. Noise filter P.C. board

MUZ-GA50VA - E1
MUZ-GA60VA - E1
MUZ-GA71VA - E1



3. Outdoor power board

MUZ-GA50VA - E1
MUZ-GA60VA - E1
MUZ-GA71VA - E1

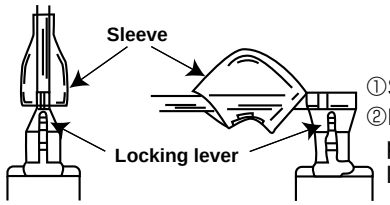


11 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

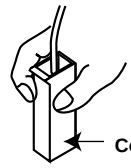
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

(2) The terminal with this connector has the locking mechanism.

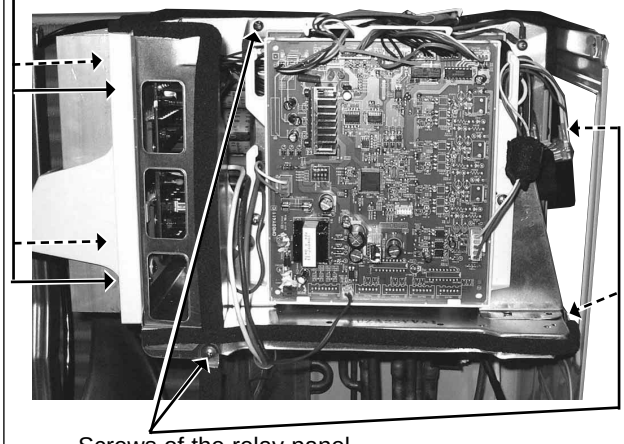


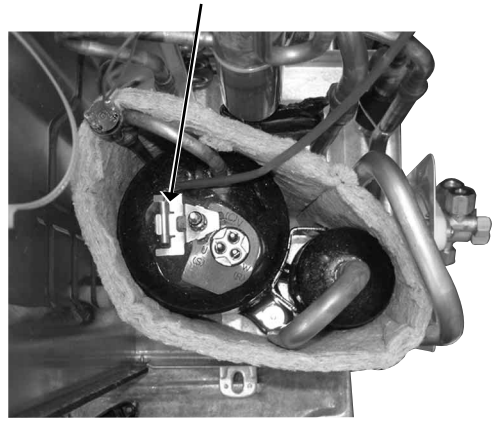
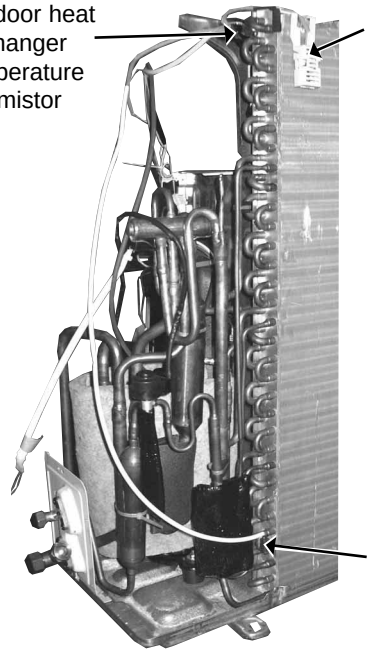
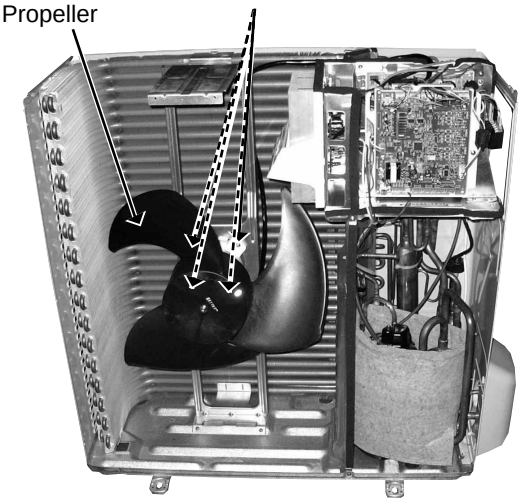
①Hold the sleeve, and pull out the terminal slowly.

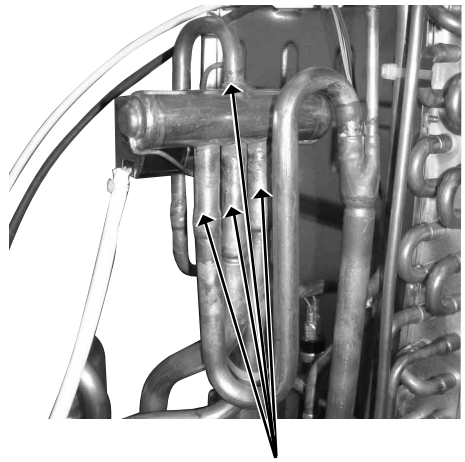
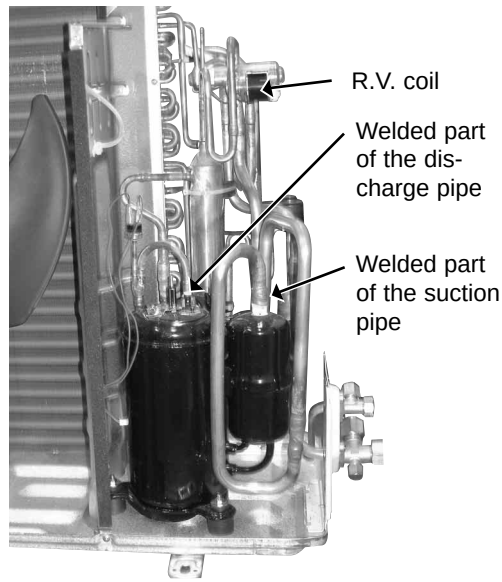
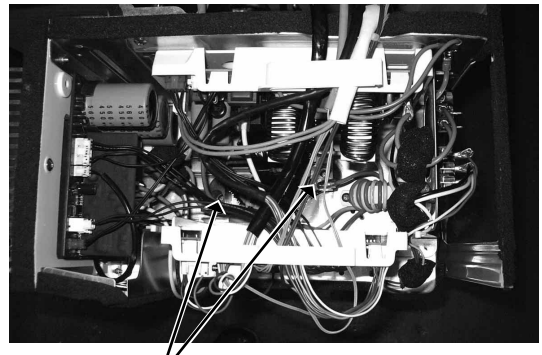
NOTE :
These photos are MUZ-GA71VA.
Other models are almost the same as MUZ-GA71VA.

MUZ-GA50VA -E1 MUZ-GA60VA -E1 MUZ-GA71VA -E1
OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the service panel. (2) Remove the screws of the top panel. (3) Remove the screw of the valve cover. (4) Remove the service panel. (5) Remove the top panel. (6) Remove the valve cover. (7) Remove the screws of the cabinet. (8) Remove the cabinet. (9) Remove the screws of the back panel. (10) Remove the back panel.	**Photo 1** Screw of the top panel Screws of the cabinet Screws of the cabinet **Photo 2** Screw of the service panel Screws of the top panel Screws of the cabinet Screw of the valve cover **Photo 3** Screw of the motor support Screws of the back panel Set screws of the back panel

OPERATING PROCEDURE	PHOTOS
2. Removing the inverter assembly, inverter P.C. board and power board (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel.(Refer to 1.) (3) Disconnect the following connectors; <Electronic control P.C. board> CN931 and CN932 (Fan motor) CN795 (LEV) CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor) <Noise filter P.C. board> CN912 (4-way valve) (4) Remove the compressor connector. (5) Remove the screws fixing the relay panel. (6) Remove the inverter assembly. (7) Disconnect all connectors and lead wires on the electronic control P.C. board. (8) Remove the electronic control P.C. board from the inverter assembly. (9) Remove the screws fixing the power board assembly. (10) Disconnect all connectors and lead wires on the power board. (11) Remove the power board from the inverter assembly. (12) Disconnect all connectors and lead wires on the noise filter P.C. board. (13) Remove the noise filter P.C. board from the inverter assembly.	**Photo 4** Screws of the power board assembly  Screws of the relay panel
3. Removing R.V. coil (1) Remove the top panel, cabinet and service panel. (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Remove the R.V. coil. (Photo 9)	

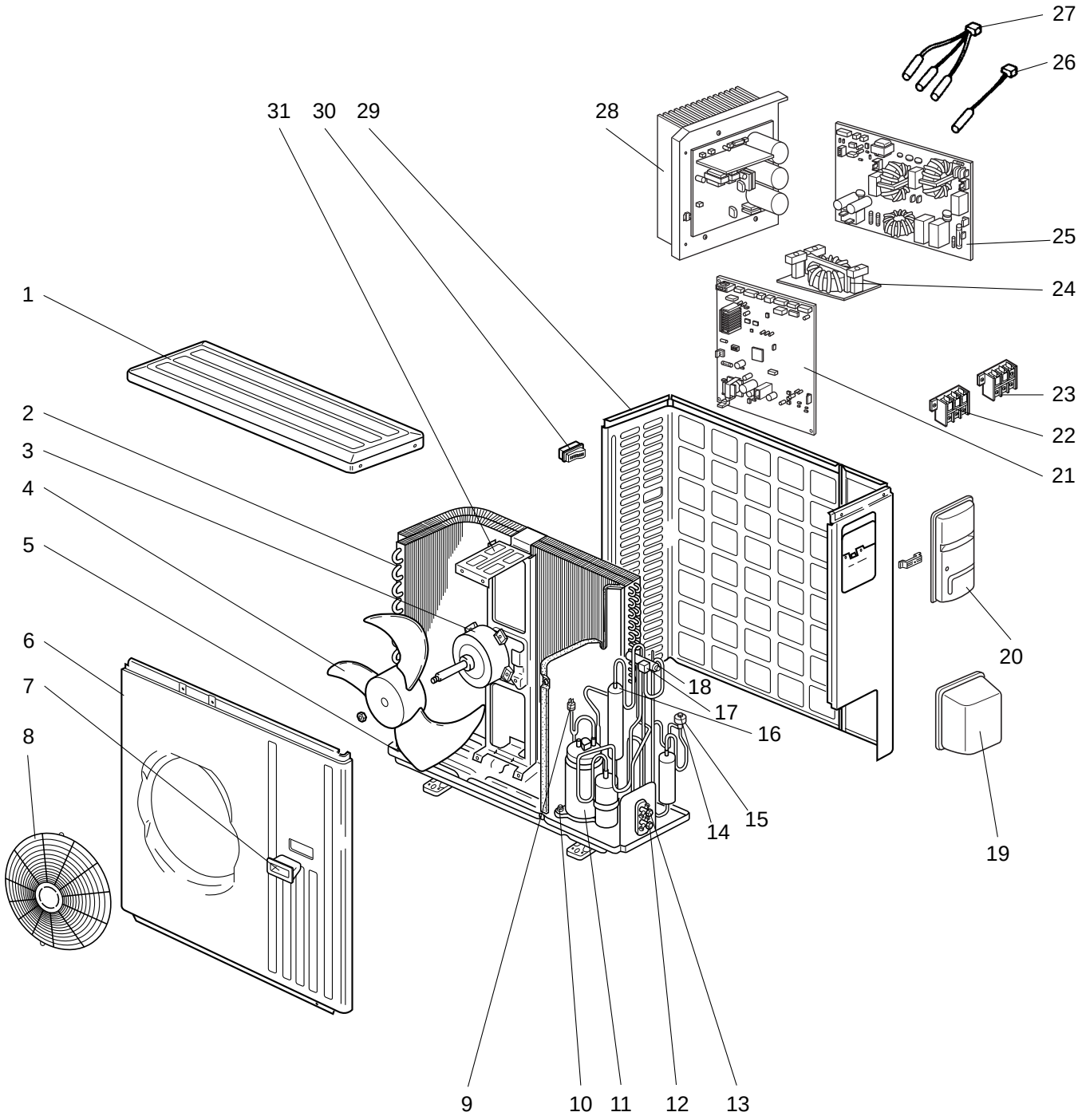
OPERATING PROCEDURE	PHOTOS
4. Removing the defrost thermistor, discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Pull out the defrost thermistor from its holder. (Photo 6) (5) Pull out the discharge temperature thermistor from its holder. (Photo 5) (6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 6) (7) Pull out the ambient temperature thermistor from its holder. (Photo 6)	**Photo 5** Discharge temperature thermistor  **Photo 6** Outdoor heat exchanger temperature thermistor Ambient temperature thermistor  Defrost thermistor
5. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Remove the propeller. (5) Remove the screws fixing the fan motor. (6) Remove the fan motor.	**Photo 7** Screws of the outdoor fan motor Propeller 

OPERATING PROCEDURE	PHOTOS
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm^2 (0 MPa). (5) Detach the welded part of the suction and the discharge pipe connected with compressor. (Photo 9) (6) Remove the compressor nuts. (7) Remove the compressor. (8) Detach the welded part of 4-way valve and pipe. (Photo 8)	**Photo 8**  Welded parts of 4-way valve **Photo 9** 
7. Removing the reactor (1) Remove the top panel. (Refer to 1.) (2) Disconnect the reactor lead wire. (3) Remove the screws of the reactor, and remove the reactor.	**Photo 10**  Screws of the reactor

12 PARTS LIST

MUZ-GA50VA -E1 MUZ-GA60VA -E1 MUZ-GA71VA -E1

12-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



These figures show about MUZ-A26YV.

MUZ-GA50VA -E1 MUZ-GA60VA -E1 MUZ-GA71VA -E1

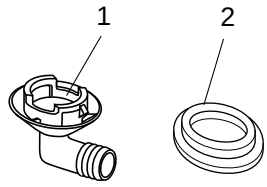
12-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

No.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MUZ-GA50 VA - E1	MUZ-GA60 VA - E1	MUZ-GA71 VA - E1	
1	E02 819 297	TOP PANEL		1	1	1	
2	E02 851 630	OUTDOOR HEAT EXCHANGER		1	1		
	E02 853 630	OUTDOOR HEAT EXCHANGER				1	
3	E02 938 301	OUTDOOR FAN MOTOR	MF	1	1	1	RC0J60- □□
4	E02 851 501	PROPELLER		1	1	1	
5	E02 851 290	BASE		1	1		
	E02 853 290	BASE				1	
6	E02 819 232	CABINET		1	1	1	
7	E02 819 009	HANDLE		1	1	1	
8	E02 819 521	FAN GUARD		1	1	1	
9	E02 853 646	HIGH PRESSURE SWITCH	HPS			1	
10	E02 065 506	COMPRESSOR RUBBER SET		3	3		3RUBBERS/SET
	E02 853 506	COMPRESSOR RUBBER SET				3	3RUBBERS/SET
11	E02 851 900	COMPRESSOR	MC	1	1		SNB130FLDH
	E02 853 900	COMPRESSOR	MC			1	TNB220FMCH
12	E02 851 661	STOP VALVE(GAS)		1			ϕ12.7
	E02 819 661	STOP VALVE(GAS)			1	1	ϕ15.88
13	E02 821 662	STOP VALVE(LIQUID)		1	1		ϕ6.35
	E02 822 662	STOP VALVE(LIQUID)				1	ϕ9.52
14	E02 851 640	EXPANSION VALVE		1	1		
	E02 853 640	EXPANSION VALVE				1	
15	E02 851 493	EXPANSION VALVE COIL	LEV	1	1	1	
16	E02 853 299	OIL SEPARATOR				1	
17	E02 935 490	R.V. COIL	21S4	1	1	1	
18	E02 891 961	4-WAY VALVE		1	1	1	
19	E02 819 650	VALVE COVER		1	1	1	
20	E02 819 245	SERVICE PANEL		1	1	1	
21	E02 935 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1			
	E02 936 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD			1		
	E02 937 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD				1	
22	E02 935 374	TERMINAL BLOCK	TB1	1	1	1	3P
23	E02 823 375	TERMINAL BLOCK	TB2	1	1	1	3P
24	E02 851 337	REACTOR	L	1	1	1	
25	E02 935 444	NOISE FILTER P.C. BOARD		1	1	1	
26	E02 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	
27	E02 851 308	THERMISTOR SET	RT61,RT62,RT68	1	1	1	DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER
28	E02 935 440	POWER BOARD		1	1	1	Including heat sink and RT64
29	E02 819 233	BACK PANEL(OUT)		1	1	1	
30	E02 817 009	HANDLE		1	1	1	
31	E02 851 515	MOTOR SUPPORT		1	1	1	
(32)	E02 127 382	FUSE	F801	1	1	1	250V/3.15A
(33)	E02 737 382	FUSE	F911	1	1	1	250V/1A
(34)	E02 935 385	FUSE & VARISTOR	F64,NR64	1	1	1	250V/2A
(35)	E02 851 936	CAPILLARY TUBE(TAPER PIPE)		1	1		ϕ3.6xϕ2.4x50
	E02 853 936	CAPILLARY TUBE(TAPER PIPE)				1	ϕ3.6xϕ2.4x50
	E02 861 936	CAPILLARY TUBE				1	ϕ1.8xϕ0.6x1000

MUZ-GA50VA -E1
MUZ-GA60VA -E1
MUZ-GA71VA -E1

12-2. ACCESSORY



No.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MUZ-GA50 VA - E1	MUZ-GA60 VA - E1	MUZ-GA71 VA - E1	
1	E02 817 704	DRAIN SOCKET		1	1	1	
2	E02 444 705	DRAIN CAP		2	2	2	ϕ33

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